

Japan International Cooperation Agency

Secretary of Industry, Commerce and Small and Medium
Enterprise, Ministry of Economy and Production, Argentina

Sub-Secretary of Industry

Sub-Secretary of Small and Medium Enterprise and Regional Development

National Institute of Industrial Technology

The Study on Revitalization of Small and Medium Enterprises in Argentina

Final Report

MARCH 2006

UNICO INTERNATIONAL CORPORATION

Preface

In response to a request from the Government of Argentine Republic, the Government of Japan decided to implement “The Study on Revitalization of Small and Medium Enterprises in Argentina” and entrusted the study to Japan International Cooperation Agency (JICA).

JICA dispatched a study team led by Mr. MORIGUCHI Toru of UNICO International Corporation, seven times during the period from September 2004 to March 2006.

The team held a series of discussions on the study with the officials concerned of the Government of Argentina and conducted related field surveys. After returning to Japan, the team conducted further studies and compiled the final results in this report.

I hope this report will contribute to the revitalization of small and medium enterprises in Argentina and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to officials concerned of the Government of Argentina for their close cooperation throughout the study.

March 2006

IZAWA Tadashi
Vice-President
Japan International Cooperation Agency

March 2006

Mr. Tadashi IZAWA
Vice-President
Japan International Cooperation Agency

Letter of Transmission

Dear Sirs;

I would like to submit a final report of the Study on Revitalization of Small and Medium Enterprises in Argentina.

The Study is concerned with the manufacturing sector in Argentina, which is now in the process of recovering, gradually but steadily, from a persistent recession followed by national economic crisis. The Government of Argentina, in an attempt to revitalize the sector by using small- and medium-sized enterprises as an engine, is eager to learn from Japan's SME support policies and programs, including their experience and lessons learned. In particular, it is highly interested in business and production management technology (soft technology) that is considered to be a major source of competitive strength of Japanese manufacturing industries in the world market.

As part of the Study, basic surveys were conducted on the current situation of small- and medium-sized manufacturers in the country. Then two model projects were implemented, jointly with personnel of National Institute of Industrial Technology (INTI) – a counterpart organization of the Study, to provide field guidance for selected manufacturers by applying soft technology, while developing a SME database with another counterpart organization, Sub-Secretary of Small and Medium Enterprise and Regional Development (SSPyMEyDR), to promote business relationships between SMEs and large assembly manufacturers. As a result, INTI has gained expertise and experience through the model project and is upgrading resources to step up support activities in the area of soft technology. Also SSPyMEyDR has inaugurated and launched the SME database available to the public.

Meanwhile, we propose action programs that are designed to continue the intention and energy of the model projects, i.e., to disseminate and promote basic technologies and to develop an environment to foster and encourage broader inter-company business relationships, which are believed to be an important role of government in the industrial development process that

should be primarily left to the working of a market mechanism. We sincerely hope that INTI and SSPyMEyDR will play a leading role in promotion of soft technology, which was the main theme of the Study, in the country's manufacturing sector by leveraging their nationwide networks and resources.

Finally, I would like to express a sincere gratitude to JICA, the Ministry of International Affairs, the Ministry of Economy and Industry, and the Japanese embassy in Argentina for guidance and support extended to the study team in the course of the Study. Also, I would like to express thanks to Sub-Secretary of Industry, SSPyMEyDR, INTI, local governments, private organizations and companies, and other groups and individuals, which have collaborated with this important endeavor.

Toru MORIGUCHI

Team Leader

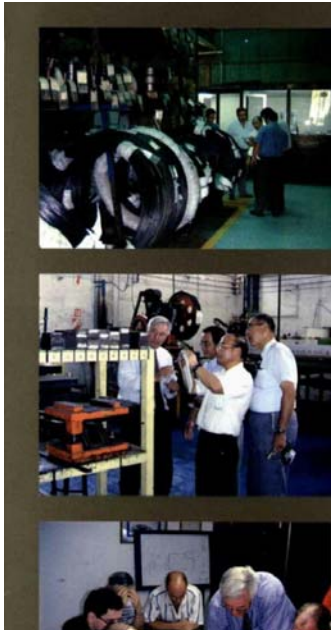
Study on Revitalization of Small and Medium

Enterprises in Argentina

Japan International Cooperation Agency

UNICO International Corporation

INTI made a brochure of the Study, in which the transfer of soft technology to the local SMEs with the experts of the Study Team is presented.



Estudio sobre la Promoción de la Pequeña y Mediana Empresa en la República Argentina

Viernes 3 de marzo de 2006 | EL CRONISTA

8

LA SEPYME AUDITA LA VERACIDAD DE LOS DATOS

Lanzan un nuevo portal para Pymes

DANIELA VILLARO Buenos Aires

La semana próxima estará habilitado al público el nuevo portal Bolsa Pyme de la Subsecretaría de la Pequeña y Mediana Empresa, en el que los empresarios podrán ofrecerse como proveedores al mercado nacional e internacional.

El portal es uno de los emergentes del Estudio sobre la Promoción de la Pyme en la Argentina llevado adelante por la Sepyme, la Agencia de Cooperación Internacional del Japón (Jica) y el Instituto Nacional de Tecnología Industrial (Inti).

Se trata de una bolsa de subcontrataciones dirigida por la Sepyme con el apoyo y financiación de Jica, que permite a las grandes empresas buscar proveedores y subcontratistas. Allí, y en forma gratuita, las Pymes pueden dar a conocer su oferta, detallar los productos que venden, las condiciones tecnológicas, brindar datos de localización y de recursos humanos, en español e inglés.

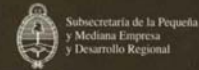
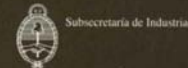
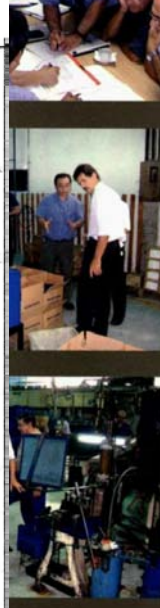
La Sepyme, en tanto, audita la fidelidad de los datos. De esta forma, "la gran empresa que busca proveerse sabe a quién está contratando. Es una herramienta copiada de las mejores prácticas del resto del mundo. En quince países europeos,



Federico Poli

donde este tipo de instrumento tiene un gran potencial, participan del sistema unas 70.000 empresas proveedoras que facturaron más de 60.000 millones de euros", dijo ayer el subsecretario Pyme, Federico Poli, durante el seminario de cierre del Estudio.

Bolsapyme estará abierto al público a partir del 11 de marzo. Permite hacer búsquedas por empresa, producto, nomenclador o región. En esta primera etapa hay 204 empresas -autopartistas, de maquinaria agrícola y alimenticia- en la base de datos y se siguen incorporando sectores. También incluye una bolsa de trabajo.



"Bolsa de PyME" (SME database) developed as a joint work of SSPyMEyDR and the Study Team was launched in the closing seminar of the Study.

Procedure of the closing seminar of the Study
on March 2, 2006 in Buenos Aires



Seminario de cierre
Estudio sobre la Promoción de la Pequeña y Mediana Empresa en la República Argentina

Instituciones:

Agencia de Cooperación Internacional del Japón (JICA)
Secretaría de Industria, Comercio y PyME
Instituto Nacional de Tecnología Industrial (INTI)

Fecha: Jueves 2 de marzo de 2006 – 8:45 a 13:00 hs.

Lugar: nH City Hotel - Bolívar 160 - Salón Plaza Mayor - Ciudad Autónoma de Buenos Aires

Agenda:

- 8:45 h **Acreditación**
- 9:00 h **Apertura**
-Miguel Peirano, Secretario de Industria, Comercio y de la Pequeña y Mediana Empresa
-Ana Caffero, Representante Especial para Asuntos de Cooperación Internacional, Cancillería Argentina
-Shinya Nagai, Embajador de Japón en Argentina
-Toshiaki Furuya, Representante Residente de JICA Argentina
- 9:20 h **Resumen del Estudio y sus Proyectos Modelo**
-Toru Moriguchi, Jefe de la misión japonesa – Unico International Corporation
- 9:45 h **Casos de implementación de mejoras en empresas modelo del Estudio**
-Reducción de PPM e implementación de 5S, Fundación GATTI (Rosario)
-Implementación de sistema Kanban, FAESA (Córdoba)
- 10:15 h Coffee break
- 10:45 h **Casos de implementación de mejoras en empresas modelo del Estudio (cont)**
-Implementación del Programa de 5S, MAI (San Martín)
-Diseño de layout de planta nueva y Mejoras de setup, Altísimo (San Martín)
-Reducción de tiempos de setup y programación de la producción, Aniceto Gómez (San Martín)
- 11:30 h **Capitalización del Estudio en el INTI: asistencia en mejoras de productividad en PyMES, tecnología transferida por Proyecto Modelo I.**
-Enrique Martínez, Presidente del INTI
- 11:45 h **Capitalización del Estudio en la SSEPyMEyDR: Portal "Bolsa PyME", desarrollado en el marco del Proyecto Modelo II.**
-Federico Poli, Subsecretario de la Pequeña y Mediana Empresa y Desarrollo Regional
- 12:00 h **Conclusiones y Recomendaciones del Estudio**
-Toru Moriguchi, Jefe de la misión japonesa – Unico International Corporation
- 12:30 h Preguntas y encuestas
- 13 00 h Cierre y lunch ejecutivo

Informes: INTI – Subprograma de Vinculaciones Internacionales

Unidad de Cooperación Técnica y Económica
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Abbreviations

ADEFA	Asociación de Fábricas de Automotores
ADERR	Agencia de Desarrollo Región Rosario (Rosario Regional Development Agency)
ADIMRA	Asociación de Industriales Metalúrgicos de la República Argentina
AFAC	Asociación de Fábricas Argentinas de Componentes
AFIP	Administración Federal de Ingresos Públicos
AFYDREM	Asociación Fabricantes y Distribuidores de Repuestos para Automotores de la República Argentina
AGE	Asesores en Gestión de Empresa
AIM	Asociación de Industriales Metalúrgicos de Rosario
BICE	Banco de Inversión y Comercio Exterior, SA
BID	Banco Interamericano de Desarrollo
CAFMA	Cámara Argentina de Fabricantes de Maquinaria Agrícola
CAP	Common Automotive Policy
CDE	Centro de Desarrollo Empresarial
CDTI	Centro para el Desarrollo Tecnológico Industrial
CEINDEPRO	Centro de Investigaciones para el Desarrollo Productivo
CEMROS	Centro Multipropósito Rosario de INTI
CET	Common External Tariffs
CGI	Confederación General de la Industria
CIDETER	Centro de Investigación y Desarrollo Tecnológico Regional
CIF	Cost, Insurance, Freight
CIME	Centro de Investigaciones del Metal Estampado
CIME	Centro de Investigación de Métodos y Técnicas para Pequeñas y Medianas Empresas
CITSAFE	Centro de Investigaciones Tecnológicas de la Provincia de Santa Fe
DAT	Dirección de Asesoramiento Técnico de la Prov. de Sta. Fe
EPSAM	Environment, Physical Sciences and Applied Mathematics
EU	European Union
FA	Flexible Automation
FICO	Feria Internacional de Córdoba
FOGAPyME	Fondo de Garantía para la Micro, Pequeña y Mediana Empresa
FONAPyME	Fondo Nacional de Desarrollo para la Micro, Pequeña y Mediana Empresa
FPM	Food Processing Machinery
GBA	Great Buenos Aires
GDP	Gross Domestic Product
GPS	Global Positioning System
IAS	International Accounting Standard

IBQP	Instituto Brasileiro de Calidad y Productividad
ICT	Information and Communication Technology
IDB	Inter-American Development Bank
IDEB	Instituto de Desarrollo Empresario Bonaerense
IMV	Innovative International Multi-purpose Vehicle
INDEC	Instituto Nacional de Estadística y Censos
INPI	Instituto Nacional de Propiedad Industrial
INTA	Instituto Nacional de Tecnología Agropecuaria
INTEMIN	Instituto Tecnológico Minero
INTI	Instituto Nacional de Tecnología Industrial
ISIC	International Standard Industrial Classification for all economic activities
JICA	Japan International Cooperation Agency
JIT	Just In Time
MERCOSUR	Mercado Común del Sur
MRP	Material Requirement Planning
MTySS	Ministerio de Trabajo y Seguridad Social
OAPLO	Organización Argentina de Producción Logística y Operaciones
OECD	Organization for Economic Cooperation and Development.
OEM	Original Equipment Manufacturing
OJT	on-the-job training
OLAC	Organización Latino-Americana para la Calidad
PATI	Programas de Asistencia Técnica Integral para la Formación de Empresarios de la Pequeña y Mediana Industria
PDE	Proyectos de Desarrollo Empresarial
PDM	Project Design Matrix
PRE	Programa de Apoyo a la Reestructuración Empresarial
REM	Replacement Equipment Manufacturing
S.G.R.	Sociedades de Garantía Recíproca (Society of Mutual Guarantee)
SCM	Supply Chain Management
SEBRAE	Servicio Brasileiro de Asistencia a Empresas (Brazil SME Promotion Organization)
SENAI	Servicio Nacional de Asistencia a la Industria
SIJP	Sistema Integrado de Jubilaciones y Pensiones
SLP	Systematic Layout Planning
SSPyMEyDR	SubSecretaría de la Pequeña y Mediana Empresa y Desarrollo Regional
SWOT	Strength,, Weakness, Opportunity, Threat
TPM	Total Preventive Maintenance
TQC	Total Quality Control
UADE	Universidad Argentina de la Empresa
UBO	Unión Brasileira para la Calidad
UIA	Unión Industrial Argentina

UNIDO	United Nations Industrial Development Organization
USI	Unidad de Sistemas de Información
UVT	Unidad de Vinculación Tecnológica
VA/VE	Value Analysis / Value Engineering

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Study Outline

Study Outline

1 Trend of Argentine Economy and Background of the Study

Argentina carried out economic reforms rapidly in the 1990s, in particular, vigorously promoting liberalization of foreign trade and investment, privatization, and deregulation. The Conversion Law enacted in 1991, accompanied by contraction of currency issue, caused the rampant hyperinflation to subside rapidly and contributed greatly to stabilization of the national economy. However, the same law, which introduced the fixed exchange rate system, resulted in overvaluation of the peso and deteriorated the current account balance of payments. The high peso increased imports and weakened domestic manufacturing industries that lost government protection as a result of deregulation. The national economy further dilapidated due to external factors such as the devaluation of the Brazilian currency.

Uncertainty about the future of the economy that showed no sign of recovery spurred drains of bank deposits and a rapid decline in foreign currency reserves due to the exchange of the local currency with the U.S. dollar, and the government initiated restrictions on the withdrawal of bank deposits and the outflow of foreign currency. As a result of these drastic measures, the de la Rúa government collapsed. In January 2002, the government discontinued the fixed exchange rate system, which was shifted to the full float system. Then, inflation accelerated and unemployment increased rapidly to bring consumer spending down further and to cause inflow of investment to stop. In 2002, the GDP growth rate fell to minus 10.9%.

In 2003, the Argentine economy showed signs of recovery as led by companies that survived through hard times marked by economic crisis and recession due to the devaluation of the peso. Especially, construction and manufacturing sectors enjoyed growth. Domestic fixed investment in the country soared by 42.7% and private consumption expanded by 10.4%. Now, the Argentine economy is clearly in the process of expansion. It is reflected in tax revenues, as evidenced by appreciable increases in export and income taxes, and government finance starts to show a brighter picture.

Table 1 summarizes changes in the percentage share of the Argentine manufacturing sector in GDP.

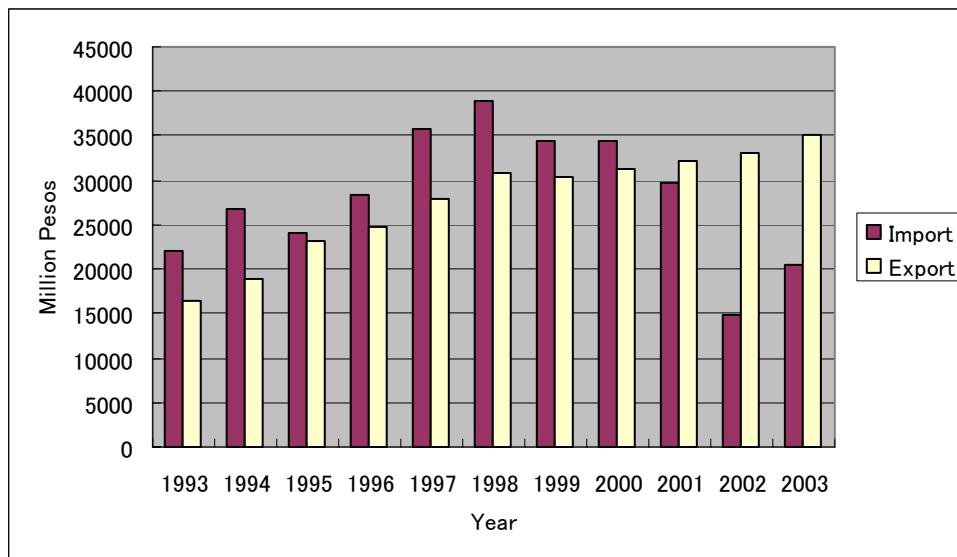
Table 1 Change in the Percentage Share of the Argentine Manufacturing Sector in GDP

Year	Percentage Share of the Argentine Manufacturing Sector in GDP
1960	29.7%
1970	24.2%
1980	24.1%
1990	18.8%
1995	16.9%
2000	16.6%
2002	17.5%

Source : MTySS

After the devaluation of the currency in 2002, the country's capacity utilization rates of manufacturing plants improved. This occurred as the devaluation of the currency discouraged imports that were replaced with domestic products that improved price competitiveness, while modernization of production capability in the 1990s, including capital investment by foreign companies, is said to have contributed in part. Industrial sectors that enjoyed a significant recovery since early 2002 are textile and garment, metalworking excepting automobiles, and basic metal. In particular, the utilization rate of the metalworking industry dropped to 23.2% in January 2002 and recovered steadily to 65% in June 2004. On the other hand, automobile and related industries that experienced low utilization rates due to excess production capacity showed signs of improvement in 2004. Although domestic auto sales are still staggering, exports to Mexico and other countries sustain adequate operating rates of the industries.

Fig.1 shows yearly changes in Argentina's exports and imports (value basis) since 1993. In 2003, exports increased by 14% and imports by 63%, and the country maintained a high level of trade surplus. In 2004, the trade surplus is expected to decrease further to reflect a rapid increase in imports. 15% of the country's exports go to Brazil, followed by Chile and the U.S. On the other hand, imports from Brazil hold a dominant 34% share.

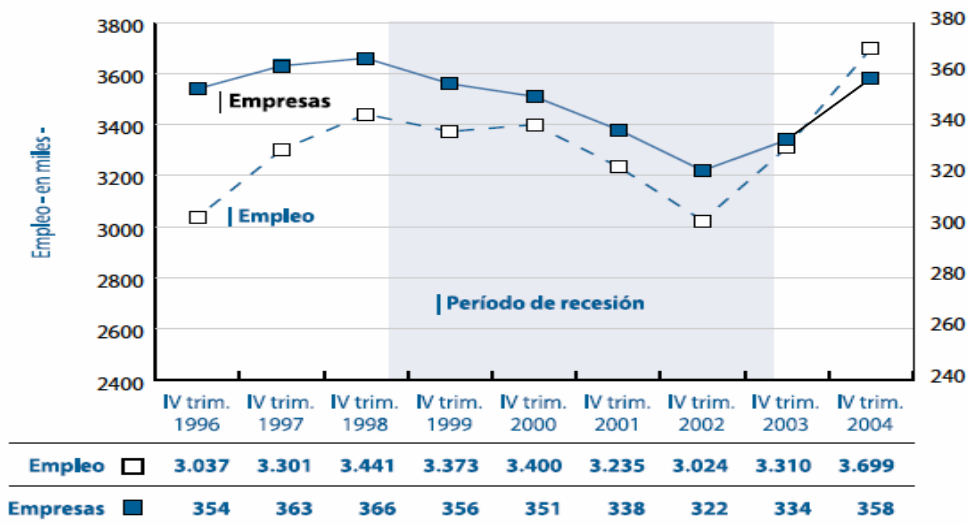


Source: INDEC (Institute of National Statistics and Censor)

Fig.1 Yearly Change in Argentina's Merchandise Trade

According to the Department of Labor (Dinamica del empleo y rotacion de empresas, cuatro trimestre de 2004), approximately 358,000 enterprises in all industries are registered in Argentina, hiring 3.7 million employees. (Fig.2)

Economic recovery is evident from comparison of key economic indicators in 2003 and 2004. The numbers of enterprises newly registered and employees grew by 11%, the highest growth rate after 1996. A net increase in the number of enterprises, less the number of bankruptcies, reached 6.6%. Sector-wise, the service sector increased by 6.5%, the commerce sector 6.4%, and the industrial sector 3.6%. In contrast, many enterprises in the industrial sector increased employees, and the number of employees expanded by 11.0%, compared to 10.5% for the service sector and 12.6% for the commerce sector. In terms of enterprise size, employment by microenterprises and small enterprises increased much faster than that by large enterprises and reached the highest level after 1995.



Nota: El área sombreada representa períodos de recesión.

Fuente: Observatorio de Empleo y Dinámica Empresarial - DGEyFPE - STPyEL - MTEySS, en base a SIJP.

Fig.2 Recent Changes in the Numbers of Enterprises and Employees in All Sectors

The Kirchner administration, which came to power after the economic crises, declares sustainable growth of the economy that accompanies employment growth as the most important policy agenda, and in particular, it considers revitalization of the manufacturing sector to be an important challenge because of a high effect of job creation and realizes that promotion of SMEs holds the key. And the government intends to promote SMEs by focusing on enterprises in industries with high growth potential and encouraging reinforcement of their competitiveness with a view to energizing export promotion, increase in local content, and development of high value added products and services. In other words, the government is expected to devise and implement policies and programs that support the business environment capable of promoting development of the manufacturing industry and the improvement of its international competitiveness in a steady way.

Against this background, the Argentine government takes notice of Japan's experience in SME fostering and support under concerted efforts the public and private sectors as well as pervasiveness of production management technology in Japan and has requested the Japanese government for technical support relating to revitalization of SMEs in Argentina.

2 Objective of the Study

The principal objective of the Study is to ensure that the Argentine economy recovers fully from

the recent crisis and promote the establishment of a stable industrial structure required for continuation of the recovery trend by revitalizing small- and medium-sized manufacturers that play a critical role in the country's industry and by promoting the reinforcement of their competitiveness in the world marketplace.

- Super-goal: To improve competitiveness of small- and medium-sized manufacturers
- Project goal:
- 1) To propose action programs required for improvement of competitiveness of small- and medium-sized manufacturers; and
 - 2) To conduct, jointly with counterpart organizations in Argentina, model projects that introduce specific kaizen activities to SMEs, to verify effectiveness of the proposed action programs, and promote improvements of capacity of SME managers and skills of SME support organizations and their staff.

3 Sectors and Technologies Covered by the Study

Small- and medium-sized manufacturers of mechanical parts for automobiles, agricultural machinery, and food processing equipment are selected for the basic survey and the model projects, which are key components of the Study.

Among the technologies required by the manufacturing industry, the Study will cover soft technology, or business and production management techniques.

4 Components of the Study

4.1 Basic Survey

Objective: To identify the current state of SME promotion policies of the Argentine government and promotion programs conducted by the public and private sectors, analyze major issues relating them, and study the current state of small- and medium-sized manufacturers. Based on the results of the analysis and study, draft action programs and model project schemes will be developed and proposed.

Key activities:

- 1) To collect and analyze relevant literature, information and statistics;
- 2) To conduct interview surveys of related central and local government organizations, trade associations, assembly manufacturers, and first-tier suppliers;
- 3) To conduct questionnaire surveys and simplified corporate diagnosis to understand the

current state of small- and medium-sized manufacturers;

- 4) To summarize SME promotion policies and support programs in Japan to use them as reference for development and proposal of action programs; and
- 5) To compare and examine candidate areas for formulation of the model project scheme, as selected by the counterpart.

4.2 Model Projects

Objective: To verify effectiveness of draft action programs and to promote technology transfer to individual enterprises and the counterpart organization by providing “kaizen” guidance for selected enterprises using soft technology.

Scheme formulation policy:

In formulating the model project scheme, the following principles are set as basic policy: 1) to ensure that the project can produce results within a relatively short period of time; and 2) to ensure that the project can be implemented on a sustainable basis by the public and private sectors, in consideration of the current framework of support programs conducted by the central and local government in terms of manpower, budget, capacity level, and other relevant factors, together with capacities of SMEs.

In selecting participants in the model projects, the following conditions are set: 1) companies that belong to the target sectors under the Study; 2) companies that are suppliers for OEM markets (not necessarily under a stable, long-term contract); and 3) companies that express a strong desire to participate.

Project area: The model project area is selected from candidate areas proposed by the counterpart, on the basis of the results of the basic survey.

Assessment of the model project and its results:

The PDM that specifies evaluation criteria is prepared during the formulation of the model project and is used as the basis of measuring the project’s results and achievements.

4.3 Formulation of Action Programs

Based on the results of the basic survey and the model project, draft action programs are examined and formal action programs are developed and proposed.

As the super-goal is set to improve competitiveness of small- and medium-sized manufacturers in the country, the proposal presents action programs that can readily be implemented under the counterpart's initiative and that can revitalize small- and medium-sized manufacturers that hold the key to a further recovery and sustainable development of the Argentine economy.

5 Organization of the Study Team and Study Schedule

5.1 Study Team

Table 2 summarizes the organization of the study team and responsibilities of study team members.

Table 2 Organization and Responsibilities of the Study Team

Job title	Name	Responsibility
General supervision and SME policies and programs	Toru Moriguchi	General supervision of the study (basic survey, model project, formulation of action programs)
SME diagnosis	Akira Hata	General supervision of simplified corporate diagnosis, and Model Project 1 (San Martín district)
Business strategy and marketing	Yoshinari Yamamoto	Basic survey and management of the model project
Production control I	Teruo Higo	Simplified corporate diagnosis, and Model Project 1 (Rosario – Rafaela district)
Production control II	Rinji Wakamatsu	Simplified corporate diagnosis, and Model Project 1 (Córdoba district)
Production control III	Nobushige Fukase	General supervision of simplified corporate diagnosis, and Model Project 1 (Rosario – Rafaela district)
Financial and management accounting	Hiromichi Kato	Simplified corporate diagnosis, and Model Project 1
ICT support	Masashi Nakajima	Simplified corporate diagnosis, and Model Project 2

5.2 Study Schedule

The field survey schedule and major activities are summarized as follows.

Table 3 Field Survey Schedule

Field surveys		Major activities by the study team
First field survey	September – October 2004	Basic survey (interview surveys of related organizations, literature research, questionnaire surveys of individual companies)

Second field survey	November – December 2004	Basic survey (continued) and simplified corporate diagnosis
Third field survey	February – March 2005	Formulation of the model projects, Model Project 1 kickoff seminar
Fourth field survey	May – June 2005	Implementation of the model projects, Study PR seminars
Fifth field survey	August – October 2005	Implementation of the model projects, KANBAN seminars
Sixth field survey	November – December 2005	Implementation of the model projects, Seminars to present results of Model Project 1
Seventh field survey	February – March 2006	Seminar to present results of Model Project 2, Seminar to present action programs

6 Seminars

During the study period, the following seminars were held.

Table 4 List of Seminars Held

Title	Date	Place	Eligible participants	Lecturer	Content
Seminar on the method for simplified corporate diagnosis	2004-11-9	INTI head office	INTI counterpart staff	Study team members	Simplified corporate diagnosis techniques
Model project 1 kickoff seminar	2005-3-2	Rosario	Companies participating in Model Project 1	Study team members	Outline of production Management technology
Study PR seminar (1)	2005-6-7	Córdoba	Open to public	Study team members	Study outline Japan's SME support policy
Study PR seminar (2)	2005-6-16	Rosario	Open to public	Study team members	Study outline Japan's SME support policy
Study PR seminar(3)	2005-6-23	Buenos Aires	Open to public	Study team/counterpart members	Study and model project outlines Japan's SME support policy
KANBAN seminar(1)	2005-9-6	Rafaela	Companies participating in Model Project 1 INTI counterpart staff	Study team members	Outline of KANBAN system
KANBAN seminar (2)	2005-9-20	Córdoba	Companies participating in Model Project 1 INTI counterpart staff	Study team members	Implementation of KANBAN system
Model Project 1 result presentation seminar (1)	2005-12-5	Rosario	Open to public	Participating companies Study team members	Presentation on results of Model Project 1
Model Project 1 result presentation seminar (2)	2005-12-6	Rafaela	Open to public	Participating companies Study team members	Presentation on results of Model Project 1
Model Project 1 result	2005-12-7	Córdoba	Open to public	Participating	Presentation on results of

presentation seminar (3)				companies Study team members	Model Project 1
Study result presentation seminar	2006-3-2	Buenos Aires	Open to public	Participating companies Study team/ counterpart members	Presentation on results of Model Project 1 Presentation of "Bolsa de PyME" Action Programs

7 Study Implementation Flow and Organization of the Report

The study implementation flow based on the study components and the organization of this report corresponding to each component are illustrated in Fig.3.

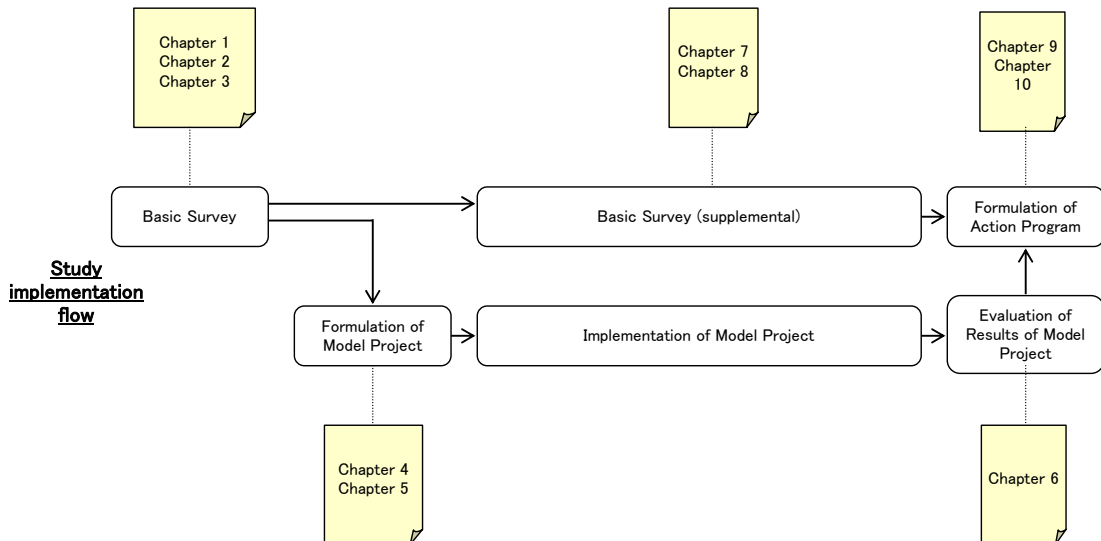


Fig. 3 Study Implementation Flow and Organization of the Report

Chapter 1

SME Policy in Argentina and Support Programs

Chapter 1 SME Policy in Argentina and Support Programs

1.1 SME Law

In Argentina, there is no law that sets forth the principle, policy and other basic framework of SME support programs, as in the case of the Basic SME Law in Japan. Thus, laws described below provide for systems and institutions for SMEs and are different in nature from the basic law. In particular, Ley 25.300 enacted in 2000 is a major amendment to Ley 24.467 of 1995, and although it amends a number of provisions in the original one, its basic framework does not change significantly.

Ley 24.467

Objective: To promote development of SMEs through a new system as well as an integrated existing system.

Enacted in March 1995

Content: Establishment of a mutual credit guarantee association; the building of an information system; the reinforcement of SME support by public organizations such as INTA, INTI, and INTEMIN; the reinforcement of a supplier development program; the strengthening of linkage with large enterprises; and promotion of access to export markets. Among them, many pages are used for the mutual credit guarantee association (S.G.R.).

Ley 25.300

Objective: To improve competitiveness of micro enterprises and SMEs by developing a new system and upgrading the existing system, thereby to develop the country's production activities.

Enacted in September 2000

Content: Establishment of Fondo Nacional de Desarrollo para la Micro, Pequeña y Mediana Empresa (FONAPyME), and Fondo de Garantía para la Micro, Pequeña y Mediana Empresa (FOGAPyME); financial access; regional and sectoral integration; modification of the tax deduction system relating to vocational training; and the establishment of the Federal Council on Micro enterprises, Small- and Medium-sized Enterprises. In particular, as a specific action for regional and sectoral integration, the law provides for the establishment of an agent network (Red de Agencias Regionales de Desarrollo Productivo) and sets a strategic direction for SME development in rural areas. Then, an access system for information and technical support (Sistema de Información MIPyME) and a

registration system for SME consultants, together with a consultant training system, are proposed as Agencia's support tool.

1.2 Definition of Micro Enterprises and SMEs

Under Resolution 675/2001 by the former Secretary of SME, the Ministry of Economy (at present, the Sub-Secretary of Small and Medium Enterprises and Regional Development (SSPyMEyDR) of the Ministry of Economy and Production), micro enterprises, and small- and medium-sized enterprises that can receive benefits of Ley 25.300 are defined in terms of annual sales excluding value added and other taxes, as shown below.

Table 1.1 Definition of Micro Enterprises and SMEs

Unit: Pesos

	Agriculture & stock farming	Mining & Industry	Commerce	Service
Micro Enterprise	270,000	900,000	1,800,000	450,000
Small Enterprise	1,800,000	5,400,000	10,800,000	3,240,000
Medium Enterprise	10,800,000	43,200,000	86,400,000	2,600,000

Source : SSPyMEyDR

1.3 Sub-Secretary of Production

Fig.1.1 shows an organizational chart of the Ministry of Economy and Production.

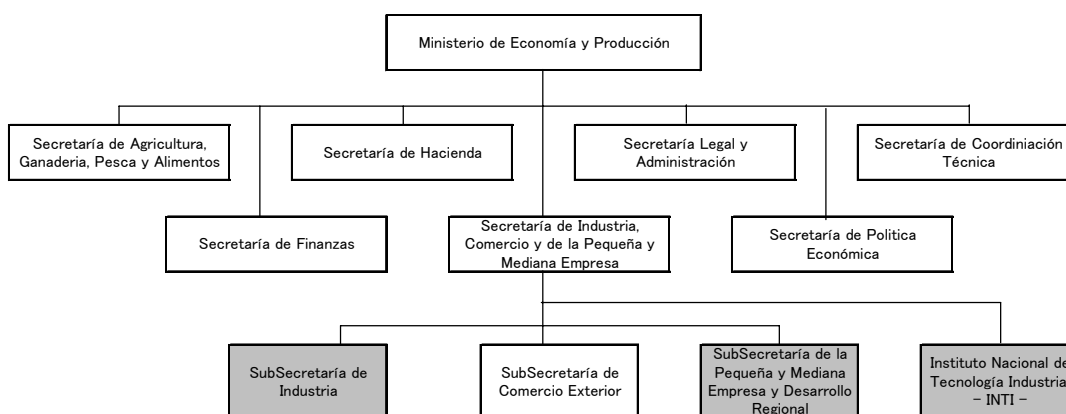


Fig. 1.1 Organization Chart of Ministry of Economy and Production

Sub-Secretary of Production (SSP) is responsible for production of the industrial sector as a whole, including SMEs. Its activities include promotion of Plan Nacional de Diseño, management of Instituto Nacional de Propiedad Industrial (INPI) that is responsible for

protection of industrial property rights, and implementation of “Programa de Foros Nacionales de Competitividad de las Cadenas Productivas”.

“Programa de Foros Nacionales de Competitividad de las Cadenas Productivas”, enacted by Resolution 148/2003, was initiated for formulation of policy that contributes to improvement of competitiveness of the industrial sector. From the company’s point of view, “Foro” is designed to allow them to know currently available support programs and have access to them, while using them as an effective means to propose strategies and support tools that are designed for the purpose. At present, nine production chains have been selected and Foro is held for them.

One of fruits produced from the above program is “Guía de Instrumentos de Apoyo Para Empresas” compiled in August 2004. It is designed to meet request of private enterprises that want a comprehensive document covering all SME support programs and tools including loan programs by the private and public sectors, except for local programs that are to be covered in the next version.

1.4 Sub-Secretary of Small and Medium Enterprises and Regional Development (SSPyMEyDR)

SSPyMEyDR is a government office responsible for formulation of SME policy and an organization responsible for implementation of various support programs.

1.4.1 Major Financial Schemes

1) Bonificación de Tasas de Interés

To provide interest subsidy of 3% - 8% for loans for working capital, capital investment, and R&D.

2) FoMicro

This is the fund created for the purpose of creating production bases and reinforcing micro enterprises through integration or collaboration, thereby to reduce unemployment, revitalize industries, and stimulate the local economic base.

3) MyPEs II

A dollar-based loan program using IDB’s funds to provide working capital, fixed asset investment, and exports. The loan period is one year for working capital and seven years at maximum for capital investment (with the grace period of three years).

4) FONAPyME

The loan scheme covers investment projects contributing to promotion of local employment

(production capacity expansion, product development, etc.), tourism, agriculture, and R&D, and customers include new startups, existing companies, and associations.

For the period of one year and half since 2003, the loan schemes of SSPyMEyDR provided MEs and SMEs with loans totaling more than 1.2 billion pesos. In particular, the interest subsidy program has been widely used by more than 55,000 companies. Yet, many SMEs cannot use the low-interest loan schemes because they cannot fulfill loan requirements, and discussion is underway to ease the examination criteria for loan applications.

5) SGRs

The number of SGRs has been steadily increasing; 9 in 2002, 11 in 2003, and 17 in 2004. In 2004, approximately 4,500 SMEs benefited from the loan guarantee service, totaling 140 million pesos that were twice that in the previous year.

6) FOGAPyME

This is the fund established pursuant to Ley 25.300 and its purpose is to provide loan guarantee by means of re-guaranteeing of loans covered by SGR's guarantee or by directly guaranteeing ME and SME loans up to 25% of the total loan value. As it has been established only recently, it has still to report notable results.

1.4.2 Export Promotion Measures

Only a small number of SMEs in the country export their products and exports by SMEs are mostly done on a spot basis. Even for SMEs that are capable of making products that can be sold internationally, it is difficult to overcome a number of problems that are different from the local market, such as commercial risks relating to export, minimum lot requirements, and logistics. SSPyMEyDR encourages SMEs to export products by forming a group, instead of a single company, under the assumption that the group approach creates competitive advantage by allowing SMEs to share experience and cost burdens. Export promotion programs that are currently in place are summarized below.

1) Grupos Exportadores

The program was started in September 2000, and today 30 groups are formed by approximately 250 companies in diverse sectors, including food processing, automotive parts, agricultural machinery parts, and metal parts.

2) Programa de Apoyo a la Primera Exportación

This program supports SMEs that want to start exports, including formulation of long-term strategy.

3) Articulación Exportadora entre Grandes Empresas y PyMEs

From the viewpoint that collaboration and complementary relationship with large enterprises contributes to improvement of competitiveness of SMEs, a joint export promotion program between SMEs having export capability and large enterprises is promoted.

4) Provision of export information, both local and foreign

1.4.3 Management Training Program

This program is designed to improve management capability of owners and managers of MEs and SMEs, to teach market knowledge, and help them to develop the ability to determine what is needed for improvement of productivity and competitiveness. In 2005, training courses to meet local characteristics will be conducted jointly with Agencia, and local organizations are invited to make suggestions for actual training content. The training fee is tax deductible.

1.4.4 Programa de Apoyo a la Reestructuración Empresarial (PRE)

This program provides subsidy to cover up to 50% of the cost for a variety of projects, including market study, product development, development of production infrastructure, merchandizing, certification of a quality management system, reinforcement of competitiveness, and the building of a production chain involving customers and suppliers. PRE covers both individual companies and trade associations. As part of the program, a directory of consultants that are qualified to participate in PRE (DIRCON) is provided.

Under the program, a total of 18 million pesos have been paid to approximately 1,500 SMEs up to August 2004.

1.4.5 Red de Agencias Regionales de Desarrollo Productivo

It was proposed under Ley 25.300 as a framework for SME support on a regional level, which was designed on the basis of successful cases in various countries. In line with the decentralization trend, it is intended to deploy support programs of the central government, including SSPyMEyDR, to rural regions, while reinforcing the ability to plan and implement SME support programs on a regional level. Now the program is one of pillars for national SME policy.

SSPyMEyDR, through the network of “agencias”, promotes cooperation with local support organizations, including systematic support, collaboration between the public and private sectors, and joint loan schemes at national, state and municipal levels. As “agencias” can carry out strategically SME support by taking into account local characteristics, while SSPyMEyDR does not have local office, the former serves as an important policy tool for the latter for the purpose of achieving the goal of regional development.

To this date, approximately 50 “agencias” have been established and networked throughout the country. They are essentially non-profit, non-government organizations having a mission to reinforce competitiveness of MEs and SMEs and promote development of local economy by disseminating and promoting various services of public organizations, especially SSPyMEyDR. Under the law, the central or provincial government is authorized to establish the “agencia” jointly with a local government or the private sector.

In 2004, SSPyMEyDR emphasized the establishment of new “agencias” in areas that are not yet served by them, but few efforts were made to strengthen activities of the existing ones. “Agencias” vary greatly in terms of activity and resources (budget and staffing), although they have to meet several criteria to participate in the network. Each “agencia” is an independent organization and its activity is not strictly regulated by SSPyMEyDR. In any case, “agencias” serve as a primary contact for companies that want to use loan schemes offered by SSPyMEyDR, such as FoMicro and MyPEs II and promote and advertise new schemes. SSPyMEyDR appoints local coordinators who communicate with “agencias” by dividing the country into five districts

For example, major activities of Agencia de Desarrollo Region Rosario (ADERR) in Santa Fe are summarized as follows. ADERR has five employees, of which three in charge of loan-related support.

- To introduce loan schemes to companies, including assistance in preparation of documents to be submitted to a bank with a loan application, such as a business plan. In 2003, ADERR provided support for loans totaling 1 million pesos.
- To promote the formation of a consortium of SMEs for export promotion, quality improvement or similar purpose. This activity was started in 2003, and in 2004, two consortiums were created to group SMEs in food processing machinery and textile industries. Export.Ar Foundation and SSPyMEyDR provide subsidy or loan to finance the cost relating to coordinators of these consortiums.
- To promote the quality mark in Rosario.

- To promote other single projects.

1.5 Instituto Nacional de Tecnología Industrial (INTI)

Under Secretaría de Industria, Comercio y de la Pequeña y Mediana Empresa, INTI provides a wide variety of services for industry, including, testing, R&D, quality control, standardization, pollution control. In particular, it offers the following services for MEs and SMEs.

- Support for improvement of technology and productivity
- Product evaluation and loan for SMEs
- Technical diagnosis for export projects
- Preparation and distribution of guidebooks
- Training

INTI's strength lies in the ability to deal with technical problems through its 29 centers, including 5 regional centers that are equipped with functions and resources to meet local needs. It should be noted, however, that production management technology, which is the major subject of the present study, is covered by Rosario, Rafaela, and Sede Central Parque Tecnológico (mainly in the form of training), while other centers are expected to build resources and expertise in the future.

1.6 Other SME Support Organizations

In Argentina, many organizations are involved in SME support activity, including the Bank of Investment and Trade (BICE) in the financial area, the Ministry of Foreign Affairs and Export.Ar Foundation in the area of export promotion, INTA in the area of technology that is a research institute specialized in agriculture (in addition to INTI that is the counterpart of the present study), as well as trade associations on national and local levels. NGOs in Red de Agencias are among many other organizations engaged in SME support. For instance, in Buenos Aires, IDEB - which is an organization responsible for SME development at a provincial level – has established a number of NGOs within the province.

Local trade associations provide service to meet the needs of member companies. Many of them emphasize seminars and information service relating to technology and management. Some work jointly with SME support organizations to operate various programs. In particular, many metalworking companies went out of business or cut back on production capacity significantly in the 1990s and many skilled workers left factories, resulting in the shortage as the economy recovers. Now some trade associations teach production skills for new workers

in cooperation of vocational training institutes.

Note that metalworking companies contribute 1% of wages to the national trade association, Asociación de Industriales Metalúrgicos de la República Argentina (ADIRA), which distributes to local trade associations the funds for workers' training. This system is expected to help invigorate activities of trade associations in the industry, although there are some problems to be solved, such as detailed delineation of service content and treatment of companies that belong to two or more associations.

Various donor organizations, including IDB, Germany, and Spain, have been carrying out technology transfer projects in the areas of quality control and production management.

As for problems, service and staff is rather limited due to financial constraint of individual organizations, together with the lack of linkage with other support organizations, companies, and financial institutions, and duplication of service among support organizations and regional inequality in availability of service. The area under the Study belongs to the capital region and a major regional city area with high levels of industrial concentration, so that more support organizations are available in comparison to other areas. As for production management that is the primary subject of the Study, there are few organizations that can lead national efforts to promote dissemination, which is still at low levels.

Chapter 2

Current Situation and Problems of Three Target Sectors of Model Project

Chapter 2 Current Situation and Problems of Three Target Sectors of Model Project

2.1 Automotive Parts Industry

2.1.1 Historical Background

In the 1990s, the automobile industry in Argentina strove to reach international levels in terms of production and product-related technologies. After the launching of MERCOSUR in 1991, Argentina and Brazil attempt to revitalize their automobile industries by expanding production and improving products. In the early 1990s, six automakers assembled cars in Argentina, namely Autolatina, Renault (which became Ciadea when majority share held by the parent company in France was sold to local investors in 1992), Sevel (local company that assembled Fiat and Peugeot models on a contract basis), Iveco, Mercedes Benz, and Scania. Passenger vehicles were assembled by Autolatina, Renault, and Seveal, while other four companies manufactured trucks.

In the first regeneration period (1991 – 1994), automobile production in the country increased by 190%. In 1994, production reached 408,000 units, which were historic high and were valued at \$7.5 billion. This expansion was bought by growth of local sales, which soared from 96,000 units in 1991 to 408,000 units in 1994. In 1994, 174,000 vehicles were imported. During the period, auto exports also increased significantly but were dwarfed by imports.

During the same period, the automakers in Argentina made efforts to boost production and improve quality, together with cost reduction and the shortening of delivery schedule. To achieve these goals, they increased imports of parts by taking advantage of import tariff that was favorably set for assemblers. Thus, they achieved cost reduction by substituting imported parts for locally made ones. In fact, imports of automotive parts surged from \$1.1 billion in 1992 to \$1.5 billion in 1994. At the same time, assemblers reduced the number of suppliers and built a technical support system with remaining suppliers. This was concurrent with the shift to module production. Assemblers made massive investment to modify plant layout and production system for the purpose of responding to booming sales. As a result, bottleneck processes were modernized and assembly plants were operated at or near capacity. Between 1992 and 1994, automakers in Argentina made capital investment totaling around \$700 million¹.

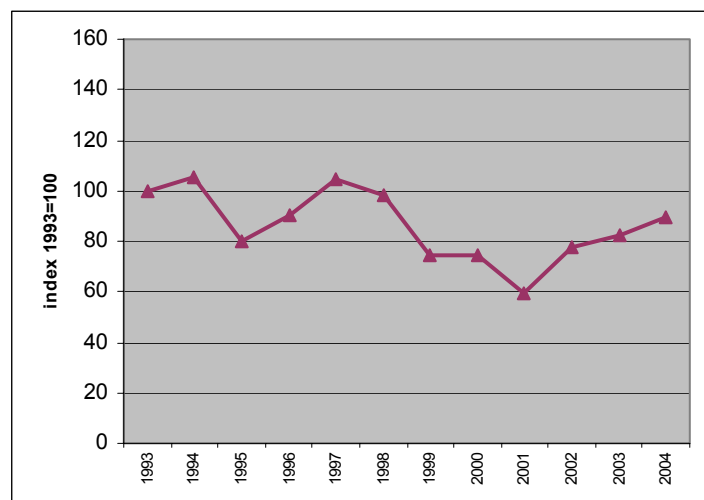
Meanwhile, local parts manufacturers also boost sales to assemblers as well as exports.

¹ Bastos Tigre, Paulo (1999), El Impacto del Mercosur en la Dinámica del Sector Automotor, BID-INTAL, p1-234

However, capital investment and kaizen activities were made by a small number of them to meet growing demand due to the aftermath of the recession occurred in the 1980s. As a result, many companies were not able to take advantage of the booming sales and went out of business in the subsequent restructuring process, which was accelerated by new competition that emerged in response to strict price and quality requirements for automotive parts.

In 1994, multinational automakers resumed investment in the country to meet strong demand. Renault and Peugeot repurchased their old plants and started production of their own models. GM, Toyota and Chrysler announced investment projects to produce commercial vehicles as their efforts to make foray into the regional market. Furthermore, VW and Ford dissolved their joint venture, Autolatin, and started their own activities. Note that the two companies did not make major changes in factory or product line, but they focused on the issue as to how they should divide production lines.

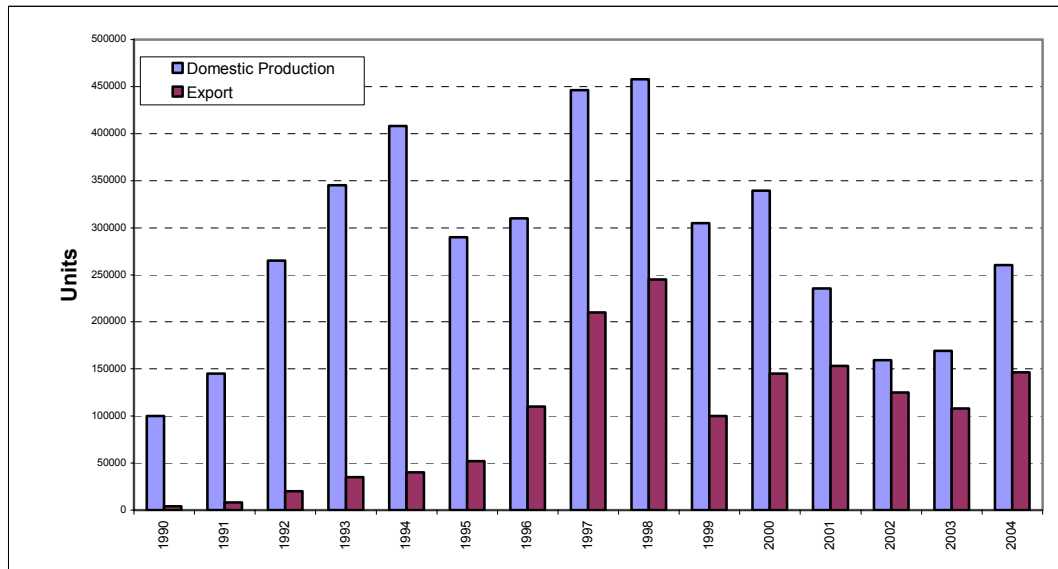
Domestic auto demand started to decline in the second half of the 1990s as the country's economy was hit by the Mexican economic crisis that occurred in December 1994. In 1995, sales plummeted to 327,000 units and production dropped accordingly to 290,000 units. The slump in the local market prompted assemblers to step up exports. Exports, which remained at a 55,000-unit level in 1995, soared to 110,000 in 1996 and 210,000 in 1997. In 1998, majority of production was diverted to exports. This export drive led to a further increase in production, reaching a historic high of 458,000 units in 1998. The production growth, however, did not give much benefit to the parts industry, especially local SMEs. In fact, production by the automotive parts industry peaked out in 1997 and continued to decline until 2001, reflecting the fact that use of imported parts grew over production of locally manufactured parts.



Source: Compiled from INDEC's data

Fig. 2.1 Automotive Parts Production Trend

At the same time, this was the period when active acquisition of local companies by multinationals took place. As a result, leading parts manufacturers were consolidated to the range of 130 – 150, forming the first-tier supplier base.



Source: INDEC, ADEFA

Fig. 2.2 Automotive Industry Production Trend (1990-2004)

As shown in the graph, the economic crisis that started at the end of 2001 caused domestic auto production to drop sharply and fall below 200,000 units in 2002 and 2003. Then, it came back strongly in 2004 on account of economic recovery and automakers' export drives. The recovery continued in 2005, and according to ADEFA's data, production between January and November exceeded 290,000 units and is expected to go over 300,000 on an annual basis. During the same period, sales grew over 370,000 units and are expected to reach 400,000 by December. Traditionally local production and sales were more or less at the same level on a unit basis, and the former has been outpacing the latter since 2001, indicating that imports increased to fill the gap. A major factor for growth of imports is said to be the failure of locally produced models to meet the market needs. In particular, small cars – mainly produced in Brazil – are very popular in Argentina. Secondly, auto assemblers weathered the financial crisis in 2001 by reducing head counts and responded to market recovery without increasing the workforce substantially, thus their productivity improved significantly between 2002 and 2004. However, productivity may not go up as fast as sales growth. In the case of automotive parts manufacturers, their workforce has been steadily increasing in response to increased orders and exports. Yet it remains at 70% of the 1998 level.

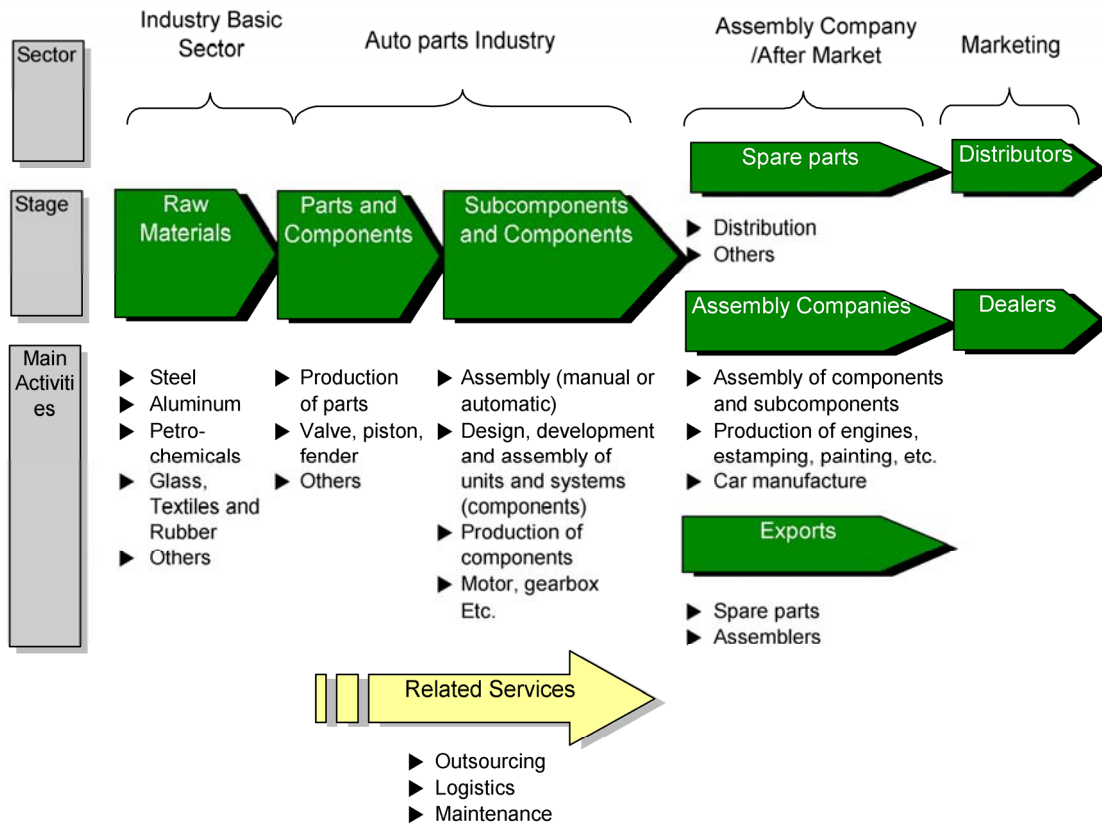
2.1.2 Industrial Structure

In recent years, automakers (assemblers) are engaged in increasingly fierce competition on a global scale and they strive to gain market share by offering new models and cutting prices. In particular, they focus on efforts to achieve continuous cost reduction and make effective use of comparative advantage in scales of economy. For instance, they reduce the number of platforms (basic components such as chassis), while introducing a flexible production system capable of manufacturing a variety of models by maximizing use of standard parts. As a result, the scale of production that provides economic viability has shrunk from 200,000 units per year to 100,000 – 150,000 units².

The new production system requires parts manufacturers to supply a wider variety of products with a more flexible delivery schedule as well as more strict quality requirements. As automotive parts account for approximately 60% - 70% of the total production cost, assemblers are increasingly requiring suppliers to participate in the process of developing a new model, including design and engineering, with a view to reducing development costs and lead time. The new production chain requiring the two-way partnership creates further burdens on parts manufacturers, which are required to make higher levels of R&D investment in return for profits that can be attained from increased production. As a result, parts manufacturers with poor technological capabilities are forced out of the production chain, where supply sources are concentrated in a limited number of companies³.

² Real, Alejandro Julio (2001), Análisis de competitividad del sector automotriz argentino, Escuela de Economía y Negocios Internacional, Universidad de Belgrano

³ Real, Alejandro Julio (2001)



Source: Asociación de Fábricas Argentinas de Componentes, AFAC

Fig. 2.3 Automotive Parts VA Chain

(1) Industry trend – assemblers

In 2004, three assemblers accounted for a combined share of nearly 70% in automobile production, namely Ford 26%, GM Chevrolet 22%, and Peugeot-Citroen 18%. On the other hand, VW held No.1 share (24%) in sales, making a sharp contrast to its relatively small share in production (less than 10%), followed by Ford (20%) and GM (18%). Notably, major assemblers also operate plants in Brazil. They manufacture either different models in the two countries or the same models. Recently, exports to countries other than Brazil are on the rise. Some assemblers promote internal production of previously outsourced parts, which entail the culling of suppliers.

Table 2.1 Production – Argentine Market (2003/2004)

By Company	January/December		Share in 2004
	2003	2004	%
CHEVROLET (General Motors SA)	45,166	58,178	22.3%
DAIMLER CHRYSLER ARGENTINA S.A	7,538	13,556	5.2%
FORD ARGENTINA S.A.	39,847	68,163	26.2%
IVECO ARGENTINA S.A.	1,475	2,503	1.0%
PEUGEOT-CITROEN S.A.	22,803	47,864	18.4%
RENAULT ARGENTINA S.A.	15,329	25,091	9.6%
TOYOTA ARGENTINA S.A.	15,810	19,355	7.4%
VOLKSWAGEN ARGENTINA S.A.	21,208	25,692	9.9%
TOTAL	169,176	260,402	100%

Source: ADEFA

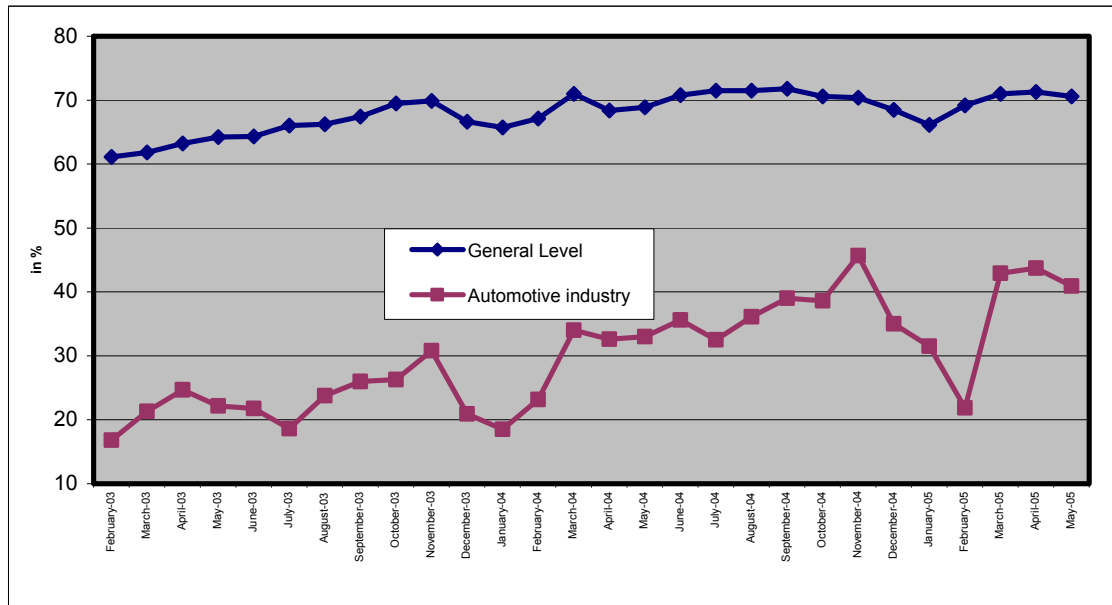
Table 2.2 Sales – Argentine Market (2003/2004)

Commercialized Units	January/December		Share in 2004
By company	2003	2004	%
GENERAL MOTORS SA	23,286	56,020	18.3%
DAIMLER CHRYSLER ARGENTINA S.A	3,332	8,119	2.7%
FIAT AUTO ARGENTINA S.A.	14,664	30,813	10.1%
FORD ARGENTINA S.A.	33,362	60,652	19.9%
IVECO ARGENTINA S.A.	1,103	2,018	0.7%
PEUGEOT-CITROEN S.A.	17,318	36,085	11.8%
RENAULT ARGENTINA S.A.	16,868	29,282	9.6%
SCANIA ARGENTINA S.A.	312	1,036	0.3%
TOYOTA ARGENTINA S.A.	11,501	12,990	4.3%
VOLKSWAGEN ARGENTINA S.A.	31,419	72,786	23.8%
TOTAL	151,670	305,551	100%

Source: ADEFA

In the 1990s, assemblers boosted production capacity by launching major investment projects. The total amount of investment reached its peak at around \$1.2 billion in 1996 and decreased sharply thereafter. Yet, the industry still suffers from excess production capacity and auto assembly plants are operated at the average capacity utilization rate of less than 50%. Clearly they are not ready to make major capital spending, especially U.S. assemblers that are expected

to report poor performance.



Source: INDEC

Fig.2.4 Capacity Utilization Trends

At present, new investment projects are dominated by installation of production lines for new models within existing plants, such as Toyota’s IMV investment and Fiat’s new engine production lines.

(2) Industry trend - automotive parts manufacturers

According to AFAC’s data, there were approximately 500 parts manufacturers in the early 1990s, which have reportedly reduced to around 400. Of total, manufacturers of 100% local ownership accounted for an estimated 30% - 40%, while joint ventures, licensed manufacturers, and wholly owned subsidiaries of foreign companies hold the remaining share. Note that the manufacturers of 100% foreign capital include parts manufacturing divisions of assemblers. Most of foreign-affiliated parts manufacturers are so-called first-tier suppliers and operate in Argentina to meet assemblers’ global procurement strategy in many cases. Also, major first-tier suppliers are often located within or near the same industrial estate where assemblers operate. Some manufacturers supply most of their products to the export market, such as an assembly plant manufacturing gearboxes for VW cars. While second- and third-tier suppliers exist, there is no clear different between them, as they supply directly to some assemblers and to other suppliers through other suppliers. Also, as local automobile production declined sharply after 2000, together with orders to parts suppliers, many companies shifted their focus to

exports and after-markets.

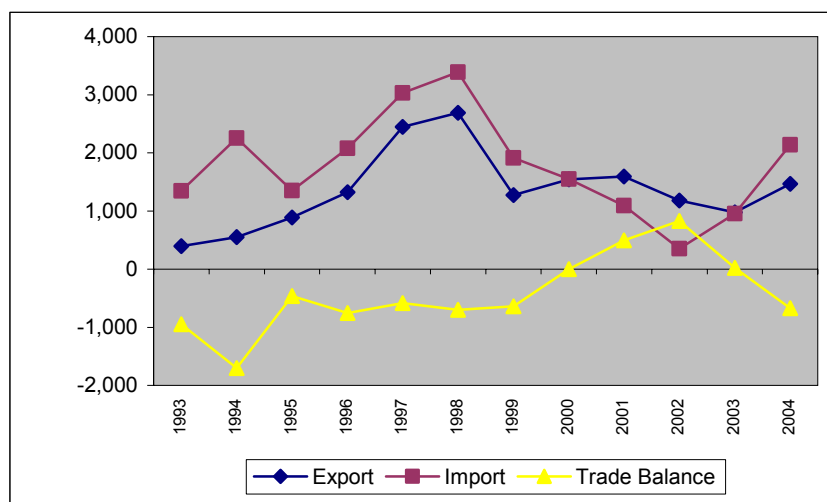
These suppliers are required by assembly to obtain ISO9000, ISO/TS16949 and/or QD900 certification. In addition, Toyota suppliers must obtain JIT certification. Major suppliers, like assemblers, operate plants in both Argentina and Brazil. They are classified as multinationals and account for approximately 30% of all suppliers, and top 20 manufacturers hold a combined share of more than 60% of parts production. They include parts manufacturing divisions of assemblers and parts suppliers that have separated from such divisions.

For parts manufacturers to become OEM suppliers, they have to pass through the assembler's evaluation process, which generally takes time. Also parts suppliers are expected to comply with the assembler's strict requirements. For instance, they are required to purchase materials and parts according to the assembler's global procurement plan. As a result, they often have to purchase imported parts rather than locally made ones. This strict rule applies to first-tier suppliers that are required to purchase parts for which sample quality inspection, the factory's quality control system, and production capacity have been confirmed by the assembler in advance. These procedures also require considerable time.

First-tier suppliers supply complex components to assemblers and are often engaged in joint R&D activities with assemblers for the purpose of product development. Furthermore, some local companies are integrated into assemblers' global procurement network for non-critical parts under assemblers' assistance, i.e., they can supply parts to local assemblers only after their quality, cost, equipment and organization have been examined and approved by an inspector sent from the assembler's headquarters, and their products are supplied to production facilities of assemblers all over the world. Under this arrangement, they can expect a substantial increase in supply quantity but have to meet price and other strict requirements demanded by assemblers.

2.1.3 International Trade

The automobile market in Argentina recorded trade deficits between 1993 and 2004, except for three years (2001 – 2003), during which trade surpluses were recorded due to a sharp decline in domestic demand. In 2004, demand recovered somewhat, but soon, growth of imports outpaced that local production. Furthermore, the automotive parts market recorded trade deficits during the same period excepting 2002. In 1998, over the half of local production was destined to export markets. Then, the export ratio rose temporarily due to the decline in the local market, but it dropped to around 50% in 2004.

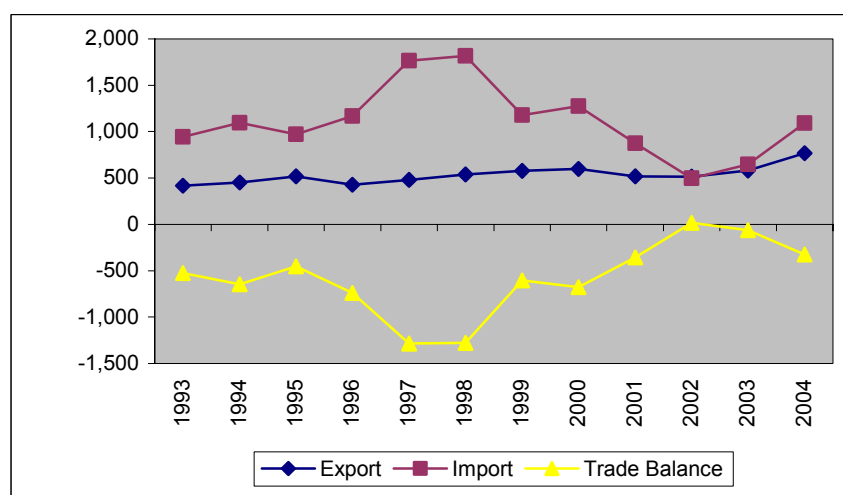


Source: Compiled from INDEC's data

Fig.2.5 Automobile Trade Balance

The Argentine government intends to expand exports to countries outside the MERCOSUR region by concluding the free trade arrangement with Chile and Mexico in 2002.

Meanwhile, exports of automotive parts are on the rise, largely because exports through assemblers - Scania, VW and Fiat – increase due to various reasons, such as the common automobile regulation enacted by Argentina and Brazil, the government's export promotion programs, and the presence of skilled workers and the decline in dollar-based wage levels after the devaluation of the peso. As a result, manufacturers that supply parts to these assemblers boost production and benefit directly from the recovery of assembly production in the country.



Source: Compiled from INDEC's data

Fig.2.6 Automotive Parts Trade Balance

2.1.4 Automobile Industry Policy

The Argentine government has been implementing various policies to develop the automobile industry since the late 1950s. The significant policy measure taken was the enactment of a law targeting promotion of the automobile industry in the early 1990s (Régimen Automotoriz), which has formed the basis of the subsequent industrial policy in the country. The substance of the law is summarized as follows.

- 1) Automakers may import assembled cars, up to 10% of the total value of production of each company, by paying a 20% tariff.
- 2) Automakers may import assembled cars, up to the total value of exports made by each company, by paying a 2% tariff in the first year, which rises incrementally to 20%.
- 3) Automakers may import automotive parts in exchange for exports by paying a 2% tariff that is fixed permanently.
- 4) Local content is set at 60% or more of the total value of parts and components incorporated into each car. This means, if a car is priced at \$100 and parts are valued at \$70, locally made parts should represent \$42, or $\$70 \times 60\%$. The law was unilaterally enacted by the Argentine government without reciprocal recognition by Brazil. As it fixed the import tariff on automotive parts at 2%, the market was subjected to import pressure in comparison to assembled cars which tariff rate was raised incrementally.

In early 1996, the government had to review and amend the law in consideration of economic conditions facing the industry. First of all, parts manufacturers were permitted to import parts in exchange for exports. Secondly, the local content formula was revised to set the upper limit for imports at 40% of the price of automobiles. For instance, the local content requirement in the above example (parts representing 70% of the automobile price) would decrease to 30% ($70\% - 40\%$). Furthermore, automakers were able to import parts without tariff.

During this period, the government provided automakers with incentives to encourage investment, which mostly relied on the lowering of tariff rates, thus working unfavorable to parts manufacturers. Also, the ratio of parts imports to exports was set at 1.2:1.0, rather than 1:1. This policy was largely a result of lobbying by automakers to the government. On the other hand, the automotive parts industry did not have a strong voice and was thus not able to obtain favorable terms. Between 1999 and 2000, one out of four parts suppliers went out of business or withdrew from the market.

In addition to the law and policy, the rapid change in the foreign exchange market worked against the part industry. Under the law, automotive parts made in Brazil were deemed to be

locally made parts and thus were permitted to be included in local content, presenting a great advantage for Argentine automakers. In 1999, as the BRL was devalued against the U.S. dollar, and resultantly the Argentine peso that pegged to the dollar. As a result, local products became relatively expensive and Brazilian products flooded into the Argentine market.

Although the automobile agreement between the two countries was scheduled to terminate in January 2000 to start free trade, the above circumstances prompted the two governments to continue the agreement by July. In July 2000, a new law (Common Automotive Policy: CAP) was enacted. Its general outline is as follows: 1) the local content system remained more or less unchanged, except for minor amendments; 2) imports of assembled cars from outside the MERCOSUR region were subject to a 35% tariff; and 3) tariff rates for automotive parts were harmonized with Common External Tariffs (CET), ranging between 16% and 18%, although they will be raised from the present 2% tariff rate to the CET rates over four years.

At the same time, the FLEX system was introduced. It was designed to balance exports and imports between Argentine and Brazil for the entire sector, rather than individual companies. Originally, the FLEX coefficient was set at 1:1. As the Argentine economy went into recession, however, the market shrank and imports declined, while local products went into a supply glut and increasingly found their way to the Brazilian market that was in a relatively good condition. As a result, the system that was intended for protection of local industries ended up in restricting them. In 2002, the Argentine government changed the FLEX coefficient from 1:1 to 2:1. It has been raised each year after then, becoming 2.6:1 in 2005.

The FLEX system is scheduled to expire at the end of 2005 and the two governments are now negotiating the new system that will take effect in January 2006. The Argentine government intends to incorporate into the system a mechanism to correct disadvantages due to the difference in market size between the two countries. At present, cars assembled in Brazil account for 60% of the Argentine market, whereas Argentine cars have a minimal presence (2%) in the Brazilian market.

2.1.5 Comparison with the Brazilian Automobile Industry

Traditionally, the auto industries in the two countries maintained peaceful coexistence by being specialized in different domains, or product categories. Argentine produced midsize (sedan) cars and commercial vehicles, while Brazilian automakers made low-cost, small cars (such as 1,000cc or smaller models and hatchback types). Recently, however, Brazilian assemblers have started to manufacture midsize cars. Also, some companies, such as GM, manufacture

the same models in both countries. In this case, assembly plants in Brazil have usually larger capacity and can enjoy cost advantage. As wage levels in Argentina fell in relative terms since 2001, sales of small grew to stimulate imports from Brazil. On the other hand, locally assembled cars lost share in the domestic market and had to find foreign markets other than Brazil. As a result, around one half of cars manufactured in the country are diverted to the export market. Besides, automobile production on a unit basis increases in the recent few years, and imports of parts from Brazil grow at a faster rate, possibly because Argentine assemblers import parts as they start production of new models.

Between 1990 and 2001, foreign investments made in the Brazilian automobile industry totaled \$31.2 billion, of which \$18.3 billion went to assembly plants and the remaining \$12.9 billion, were spent on the parts industry. In contrast, foreign investment in the Argentine industry between 1993 and 2002 amounted to \$6.3 billion, roughly one third that in Brazil, of which \$0.9 billion were invested in the parts manufacturing sector, less than one tenth that in Brazil. This difference is reflected in the difference between parts manufacturers in the two countries, not only in terms of production capacity but equipment modernization. Argentine companies have been generally established earlier than the Brazilian counterpart and their machinery is older and obsolete to magnify the gap.

2.1.6 SWOT Analysis

The results of the SWOT analysis of the Argentine auto industry are summarized as follows.

Strengths

- Productivity is improving due to demand growth in recent years.
- There are assemblers that have large production capacities.
- There is an agglomeration of parts manufacturers as well as engineers and skilled workers.

Weaknesses

- Demand in the domestic market and supply by assemblers are not balanced. Imports increase because popular models are not produced locally.
- The industry has not established the flexible production system. In particular, local parts manufacturers have poor production capabilities.
- Local parts manufacturers are dominated by SMEs and are unable to make large investment because of uncertainty in the future. Also, financial institutions are reluctant to lend capital investment funds.

Opportunities

- If the industry improves productivity further and develops flexible production capability, it will be able to improve production capability and increase exports.
- At present, local content in the industry seems to be very low. Raising it will boost production of automotive parts.
- Assembly plants that are currently closed down can resume operation.

Threats

- If supporting industries (including parts suppliers) are unable to keep up with increased production of assembled cars, the hollowing out of the parts industry will progress further.
- Unless the present bottleneck – the shortage of engineers and skilled workers – is resolved, the industry's technological base will weaken further.
- Unless the industry gains competitiveness not relying on the present cost advantage, which will disappear in due course, it will not be able to explore export markets and imports will increase to create competitive pressure.

The automobile industry is generally governed by strategies and attitudes of assemblers that are multinationals, while many parts manufacturers that constitute the supplier base have not established international competitiveness and have a long way to improve in the areas of production management, at least as seen by the study team. As parts manufacturers, which function as supporting industries, are not in a position to lead the industry. Instead, they can improve the industry's competitiveness from the bottom up by making continuous improvements in cost, quality and delivery schedule to win confidence of customers (assemblers) and new orders. In other words, they should set a goal to become an integral part of the assembler's global strategy. Needless to say, they also have another strategic option to serve the aftermarket, and they still have to improve competitiveness by developing the ability to meet strict requirements peculiar to the market.

2.2 Agricultural Machinery and Parts Industries

2.2.1 Historical Background

(1) Beginning

The origin of the farming machinery industry in the country dates back to the mid 19th century, when a group of European immigrants settled in the southern part of the Province of Santa Fe. There they set up the first farming colonies in the nation. Among these colonists was an Italian named Nicolás Schneider, who in 1878 built Argentina's first industrial plow. This gave birth to a sector that has been manufacturing farming machinery for over 120 years. The manufacturing of agricultural machinery implements also began in the early 20th Century. In order to supply spare parts, offer repairs and adapt imported equipment to local needs, workshops were set up in farming areas. Since then, there has been a continuous flux of family-owned businesses in the country's interior, all geared around providing the farmers of the Wet Pampas with tools for the farmland. As the years went by, new techniques and designs were developed and with these came the national industry's first harrows, threshing machines, multipackers; and later on, harvesters, tractors and seed drills. Parallel to these consecutive ventures, which accompanied innovations and original designs; the sector kept growing and expanding, driven by a dynamic and prosperous farming sector, despite the difficulties that World War II posed to imports of capital goods.

(2) Import substitution industrialization stage (1954 – 1975)

The 1950s showed strong growth in local production of farming machinery. This period was characterized by a high level of internal market protection, a high variance of relative prices among sectors, as well as by the promotion of industrial activities fostered by the State. Towards the end of the 1950s, the configuration of the sector was defined by the emergence of subsidiaries of multinational companies, specialized in the manufacturing of tractors.

Towards the second half of the 20th century, a variety of manufacturers of farming machinery and parts, specialized in adapting foreign designs to local and regional conditions, also started up businesses the interior of the country. The growth of these industries intensified. The great productive and geographic diversity of demand of domestically-made farming machinery resulted in the construction and adaptation of specific tools. The sector specialized in industrial development with predominance of hand-crafted production that manufactured on demand, almost without stock (a characteristic that lasts to this day). Some small family-owned businesses, who started as a simple workshop, steadily developed to medium-sized companies, with regional, and nationwide reach, and in some cases, even international reach.

(3) The first opening of the market (1976-1990)

This period was characterized by the reduction of trade tariffs, the drop in the exchange rate, deregulation and the shrinking of the Argentine markets for farming machinery, as well as that of fiscal and credit incentives towards industrial activities. As a result, production of tractors decreased to one half the previous level and sales of harvesters dropped sharply. The unrestricted entry of imported machinery posed very severe competition on the national industry, due to the limited quality, design and safety offered by the local machinery, developed under the shield of strong protection in previous years. So during this period many companies in the sector went out of business, while imported machinery began to gain significant market share in the harvester and tractor markets. The predominating characteristics of this period were uncertainty, the variance in relative prices and the creation of the MERCOSUR trade block. In the 1980s, an average of little more than 6,000 tractors and around 1,000 harvesters were sold.

(4) The period of stability (1991-2001)

This phase was characterized by the lowering of tariff rates, stabilization of exchange rates, and a further escalation in conflicts within the MERCOSUR region. At the same time the availability of credit brought about the recovery of local demand for farming machinery, also thanks to the situation that prices of cereals and oils rose. Also the importation of harvesters and tractors made gains on domestic production, reaching 80% of the market for both products. Yet, towards the end of the period, new technologies were introduced to the country, such as direct sowing, as well as the use of new electronic and satellite technology on harvesters and self-propelled dusters.

Another major trend seen in these years was a change in direction regarding the strategy applied by the main multinational manufacturers of tractors and harvesters. Towards the end of the 1990s, these companies started to consolidate their production capacity by relocating their plants to Brazil and while manufacturing parts and components in Argentina. The manufacturers became exporters of some parts and importers of assembled machinery (companies such as John Deere and Agco Allis stopped manufacturing tractors in Argentina and began assembling engines made from imported parts).

(5) Present stage

As of the devaluation of the local currency in early 2002, a new period has begun, characterized by a stage that combines high prices in the country's main crops with relative prices that are more favorable to the local machinery manufacturing industry. This sets a change in tendency

with respect to the decreasing evolution observed in the sector. In effect, under the new conditions and with a strong recovery in machinery demand for, an increase in the diminished value of national production occurred with a decrease in the amount of imported parts that go into the production of such machinery, since it is replaced by domestically-made components. Given the general recovery, the parts manufacturers modernized their production equipment by hiring engineers and skilled workers at production and engineering divisions. Although as a whole, this sector has had a strong recovery in the last three years, it has still not recovered from the previous fall, which began during the 1990s. While the Convertibility Plan was in effect (1990s), the harvester and tractor market was particularly overtaken by imported machinery, which currently represents between 80% and 85% of the domestic market's supply of these goods. Most domestic manufacturers of this machinery disappeared and the few that were able to survive have greatly decreased their levels of production. In the case of tractors, domestic production plummeted from a little over 5,000 units in 1996 to a figure that was a little over 100 vehicles in 2001; while production of harvesters during the same period fell from 680 units to 150.

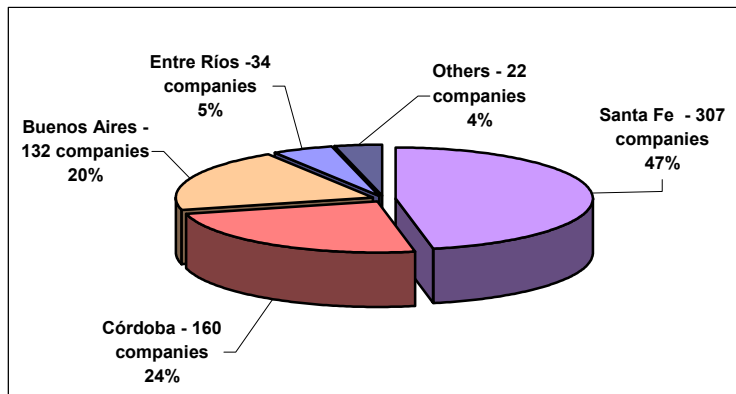
2.2.2 Current Situation

(1) Size and composition of the sector

Currently, the farming machinery manufacturing sector consists of approximately 650 companies, including the makers of agro parts. According to information from MAGIC/CFI, a little over 95% of these firms are concentrated in four provinces: Santa Fe (47%), Córdoba (24%), Buenos Aires (20%) y Entre Ríos (5%). Nearly half of them are makers of agro parts, while the remaining ones are manufacturers of farming machinery. For the most part, these are family-owned businesses, and it is estimated that 42% of these employ less than 10 employees, while 10% employ more than 55 workers.

The geographical distribution of companies is consistent with the distribution of the country's main crops. Consequently, it is verified that more than 80% of wheat, maize and soybean production is concentrated in Buenos Aires, Santa Fe and Córdoba, while these provinces gather a little over 90% of farming machinery manufacturers⁴.

⁴ Chudnovsky, Daniel y Castaño, Angel (2003) "Estudios Sectoriales – Sector de la Maquinaria Agrícola", BID, Oficina de la CEPAL- ONU



Source: CIDETER

Fig. 2.7 Geographical Distribution of Farming Machinery Manufacturers

1) Province of Santa Fe

In the Province of Santa Fe, the counties where more companies are concentrated are Belgrano, Caseros, Castellanos and Las Colonias. In Belgrano County, one can find the towns of Las Parejas, Las Rosas and Armstrong, which make up the denominated farming machinery triangle, home to 120 companies of the sector. According to data obtained from the CIDETER Foundation, 61% of industries in this county sell at least part of their production within their own proximity. 90% sell to the rest of the Province of Santa Fe, while 96% does so to the rest of the country and 14% to foreign markets. At the same time, parts and components used for production are supplied by makers operating in the same area. Steel, bearings, bolts, iron alloys and tires are supplied from manufacturers in other areas or purchased from importers in Buenos Aires. A part of steel products, electronic components and GPS satellite technology are imported.

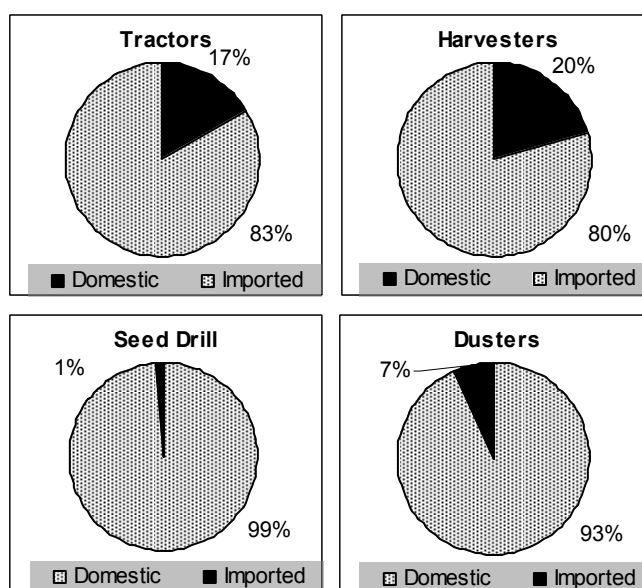
2) Province of Cordoba

According to data from the Industrial Registry of the Province of Cordoba, by the year 2000, there were 177 manufacturers of different types of farming machinery, of which 160 employ less than 50 workers. The counties that have the most factories are: Marcos Juarez (41), San Justo (37), Union and Río Segundo (18), and Juarez Celman (14). In the south of Córdoba, we find the company that has the highest volume of sales in the dusters market, Metalfor S.A., as well as the largest company in the agro parts sector, Mainero S.A.

(2) Subsector

Although the sector has a significant amount of companies, the markets for its sub-sectors are

controlled by a handful of companies. In the case of tractors and harvesters, more than 80% of each market is held by three of the biggest multinational companies of the sector: John Deere, Agco Allis and Case-New Holland. In the seed drill market, the share of imported equipment is low. More than 65% are supplied by 8 or 9 national companies, while in the case of self-propelled dusters, only two national manufacturers share 80% of the market: Metalfor S.A. and Pla S.A. Between 2003 and 2004, the sales of these four types of equipment in the domestic market averaged to nearly 1.7 billion pesos annually. Of these, harvesters and tractors represented a combined share of 70%, but they were markets where national production had lost share to imported machinery.



Source: Own elaboration based on data from INDEC and INTA Manfredi

Fig. 2.8 Percentage Covered by Imported Equipment in Markets of Different Sub-Sectors (2003-2004 average)

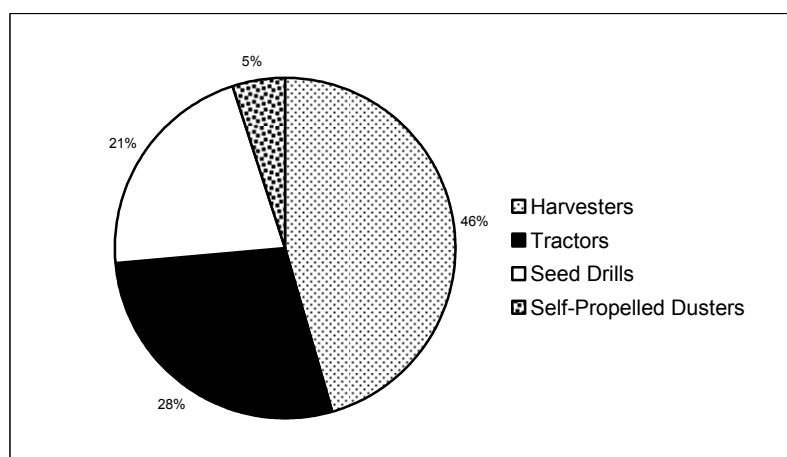
1) Tractors

Locally manufactured tractors have been losing ground to imported machinery over the last 15 years. In 1990, there were seven tractor manufacturers in the country. Four were subsidiaries of multinationals (Deutz Argentina, Industrias John Deer Argentina, Massey Ferguson Argentina, and Agritec – ex Fiat). The remaining three were owned by local capital (Zanello, Macrosa and Tortone). Throughout that decade and within the framework of growing globalization of the regional and worldwide farming machinery market, the multinationals built plants in Brazil and broadened their operation in order to serve the regional market. Since then, their local subsidiaries have begun to operate as import dealers,

manufacturing only some specific types of components in the country.

Currently, 83% of the local tractor market is controlled by the three global manufacturers: John Deere, Case-New Holland and Agco Allis. Three local manufacturers occupy a marginal position in the market. They manufacture machinery that in general competes on a basis of price, but which is technologically incomparable to international-class machinery and their production volume is very small. These companies are Pauny S.A. (formerly Tractores Zanello), Agrinar S.A., and T&M S.A. Although they are striving to recover positions in the market and upgrade their products, they have failed to capitalize on the market recovery that should have allowed them to improve their sales, due to the shortage of human resources that meet increasing demand.

During the 2001 - 2005 period, the origin of imported tractors has been predominantly Brazil (90%), followed by the United States (8%), and the United Kingdom and Italy with the remaining share. The total value of imports in 2004 came to 142 million dollars (CIF).



Source: Own elaboration based on data from INDEC and INTA

Fig. 2.9 Equipment Share per Segment (2003-2004)

2) Harvesters

In the early 1960s, there were approximately 28 manufacturers of harvesters owned by domestic capital. Most of these were located in industrial clusters in the provinces of Santa Fe (Firmat, Casilda, Arequito, Sunchales), Córdoba and Buenos Aires. The majority were small or medium-sized, as well as family-owned. They mainly served surrounding markets. In 1982, the number of factories decreased to 13, which were much larger in size, and have fewer levels of vertical integration, excessively high capacity and more specialized than in the

1960s.

The number reduced to ten in 1990, and only three left in 2001, all of which continue to operate today. One of them (Vasalli Fabril) is far larger in capacity than the other two (Agroindustrial Bernardín San Vicente and Marani-Agrinar). During the last year, one of the leading domestic manufacturers in the dusters market - Metalfor S.A. - rehabilitated its old Araus harvester industrial plant and recently, manufactured and sold around 20 units per year.

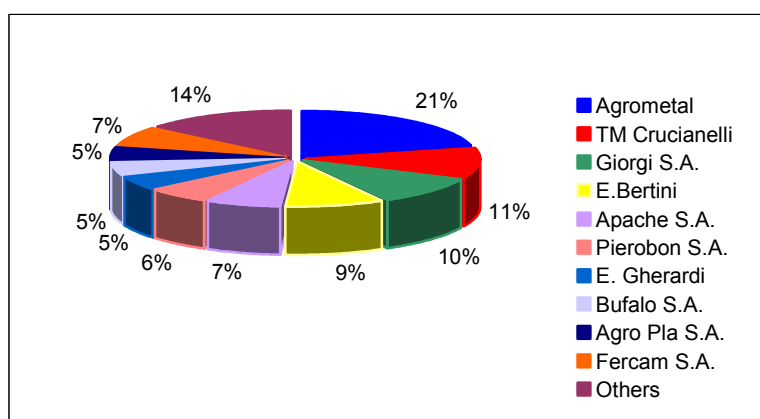
Similar to the case of the tractor sub-sector, 80% of the harvester market is in the hands of world leading multinationals. Some of them operated in Argentina, but during the 1990s, they relocated plants to Brazil in order to boost production capacity to serve the entire region. In 2004, nearly 3,000 harvesters were imported, and 87% came from Brazil, 10% from the United States and the rest from Germany.

3) Seed Drills

From the 1990s until now, the seed drill sub-sector is the fastest growing market. Imported goods never had much room in this market, due in part to the natural barriers established by the particularities of this type of product, i.e., the advances achieved in the areas of pneumatic and mechanized dosage, seed calibration, adaptation of equipment to precision seeding, are proven to have a formidable competitive advantage over imports.

Currently, the seed drill market, which is being served by over 30 companies. However, nearly 85% of sales in this market are made by nine or ten companies, including Agrometal S.A. (the most important in the sector, with nearly 20% of the market), TM Crucianelli, Giorgi S.A., Apache S.A., E. Bertini, Pierobon S.A., Bufalo S.A. and Agro Pla S.A.

Most of the companies are located in what is called the Central Zone Conglomerate, consisting of cities in the southern region of Santa Fe and the western region of Córdoba. Imports remain at minimal levels and come mainly from Brazil, and in second place from the United States.



Source: Maquinagros - CIDETER

Fig. 2.10 Seed Drill Sales Company Market Share (1st Four-month period of 2005)

4) Self-Propelled Dusters

Argentina has farmland of over 16 million hectares, 60% of which is used for crop cultivation and cattle raising. Direct sowing is used for 80% of farmland producing soybean, 60% maize, 50% wheat, and 30% sunflower. Argentina accounts for 20% of the world farmland using direct sowing. Direct sowing contributes to a quantitative and qualitative improvement of soil exploitation. Together with other changes and developments in the field of genetics and farming techniques, it has allowed a greater sustainable and efficient expansion of production.

Domestic manufacturers of self-propelled dusters, as is the case in seed drills, have been able to keep a dominating share of the market despite imports. They have reached high technological levels which are maintained by constant innovation, especially application and usage of agricultural chemicals and the use of GPS technology.

Currently, although there are 15 local manufacturers accounting a combined share of around 80% of sales, in the domestic market, some 750 self-propelled dusters are sold yearly. 30 are of Brazilian origin, 600 are supplied by the two leading manufacturers (Pla S.A. and Metalfor S.A.), and the rest are supplied by other local companies, which are smaller in size and in production capacity. Likewise, this sector exports nearly one million dollars in sales, shipping nearly 80% of these products to Uruguay, about 9% to Paraguay and a similar amount to Bolivia. In consideration of the importance of the Brazilian market, the two leading manufacturers have recently set up manufacturing plants in the south of the country due to the difficulties in exporting to Brazil.

(3) Agricultural Machinery Parts

Agricultural machinery parts come in great varieties, including tillage parts, harvester headers, harrows, cultivators, rakes, trailers and hoppers, seeding bodies, bodies fitted on fertilizers, pieces and parts adapted for fertilizers and seed drills, crop residue plows, cutting blades, and grinders. Most of these manufacturers are family-owned, small- and medium-sized Argentine companies with no more than 5 workers. With deep roots in the local market, they maintain strong holds in the areas where they operate. Data from MAGIC/CFI (Ministry of Agriculture, Cattle, Industry and Commerce of the province of Santa Fe/ Federal Investment Council), for 2001, indicate that there were some 270 manufacturers in the country. In the making of harvester headers, whether for maize farming or for sunflower farming parts, domestic manufacturers represent 95% of the market. Among the main ones are Mainero S.A., Maizo S.A. and Alliochis S.A.

As for headers for cultivators (corn and sunflower), local manufacturers dominate the market with an overwhelming 95% share. Leading manufacturers are Mainero, Maizo, and Alliochis. As for self-unloading hopper trailers, the market is competed by local 35 companies. Market leaders are Cestari SA, Ombú SA and Akron SA., with a combined share of 95%.

The major industry trend is the technological advancement, particularly it is important to mention the supply of parts for electronic controlling and base monitoring. The supply of such equipment mainly comes from abroad. However, in recent years, local manufacturers (such as Sensor Automatización Agrícola, DyE, etc.) are making their own developments. Among them, DyE has developed the DyE Terra 5200 Variable Seeding System, a system that consists of a console that can indicate the amount of a product to be applied to the seed drill or to the fertilizer.

2.2.3 Structure of the Farming Machinery and Agro Parts Industries

(1) Mercosur and domestic companies

At the MERCOSUR trade block level, the Argentine and Brazilian markets represent an average of 45,000 units (tractors and harvesters) sold per year, with the latter boasting a dominant presence. The market, as seen in the global market, is controlled by a group of foreign firms. In both cases, Agco Allis, Case-New Holland and John Deere represent almost 80% of annual sales. Between 1999 and 2000, agricultural production in Argentina declined sharply due to price erosion of grains and edible oils, hitting tractor, harvester and agro parts industries hard. In response, multinational manufacturers relocated their plants to Brazil. Although Argentine

industries were supposed to benefit from horizontal specialization (parts) that would create scales of economy, the increase in relative cost due to the appreciation of the peso and financial incentives offered by the Brazilian government worked favorable for production in Brazil.

Talbe 2.3 Tractor and Harvester Sales (in units)

Sales in	2002	2003	2002/2003	%
Argentina	1,810	8,508	10,318	11%
Brasil	38,865	43,000	81,865	89%
Total Sales	40,675	51,508	92,183	100%

Source: Own elaboration based on data from INTA and INDEC

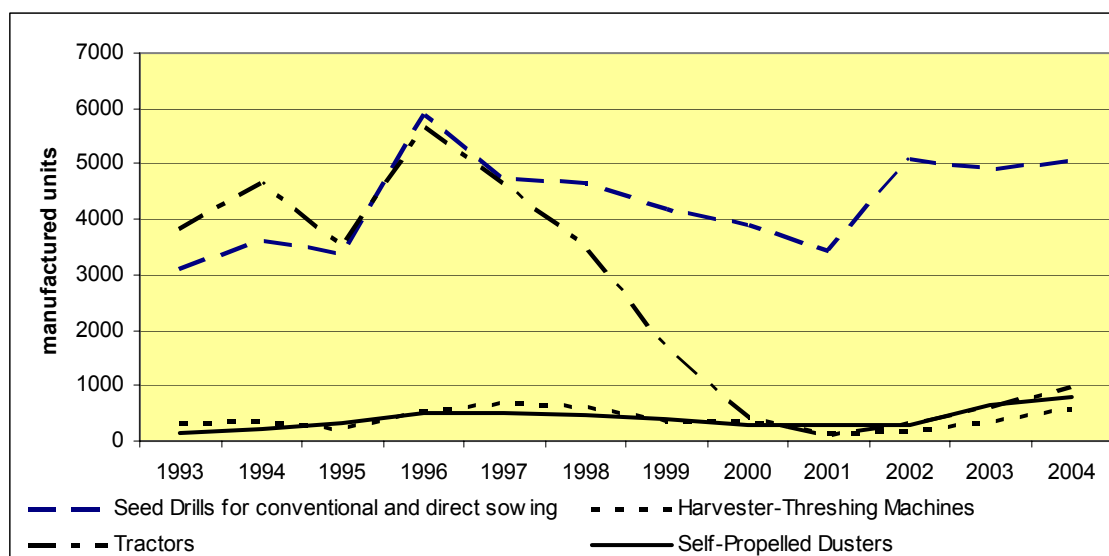
As for local production of seed drills and dusters, during the last few years local manufacturers have improved their competitive advantage by incorporating numerous technological advances and by improving their products (in design, by adding electronic control systems for the resistance and weight of materials, etc.) At the same time, some of these companies have also undergone changes in management to younger generations, with a management approach that is keener on adopting associative and innovative strategies, as well as on garnering the new investments that considerably allowed for an improvement of production capacity.

In the area of strategic alliance between manufactures, there are two distinctive moves.. One of them was carried out by the three leading companies in the market (Pauny, Agrometal and Vasalli). They formed a consortium to supply a wide range of products (tractors, harvesters, and seed drills) at an international level. The other one has to do with five makers of farming machinery from the cities of Armstrong and Las Parejas known as the CONSUR exporting consortium, created in 1994. The participating companies here are Máquinas Agrícolas Ombú, Talleres Metalúrgicos Cricianelli, Metalúrgica Cinalfor, Industrias Erca and Descanio S.A. For the most part, their products are complementary, as they are representative of each one of the sub-sectors in the sector.

(2) Production (1990-2004)

Among major production trends in the 1990s, there was initially a productive growing stage for all sub-sectors that extends through 1996. This growth can be explained by a series of factors: greater economic stability, an increase in the cultivated area (which had steadily been increasing since 1992), an increase in productivity per hectare (due to technological advancements and an intensive use of fertilizers, pesticides and other agrochemicals), an increase in the international price of grains and oils, and changes the sector's production methods. The decade's second

period begins in 1996 and is characterized by a strong declining tendency which extended until 2001 for all sub-sectors in question, with the tractor's being the most battered one. The production of this kind of machinery, as was mentioned before, drops from little more than 5,000 units in 1996 to nearly 100 in 2001, a drop consistent with the transfer of multinational firms to Brazil, after having closed their plants in Argentina or of using them only for the manufacturing or some component. The best-performing sector in this same period was the seed drill sector, as it had a strong share in direct sowing machinery market, highly linked to the increase in the surface of soybean farmland. As of 2002, following the deep economic crisis that shook every sector of the Argentine economy, domestic production of farming equipment began a moderate but persistent recovery. It achieved an average growth of 85% between 2001 and 2004 for all the concerned sub-sectors combined. In this respect, the sector seems to have greatly benefited from the change in relative prices which resulted from the currency devaluation that made imported machinery more expensive and rendered domestic production more competitive. At the same time, this favored farming production, since it was also stimulated by better international prices.

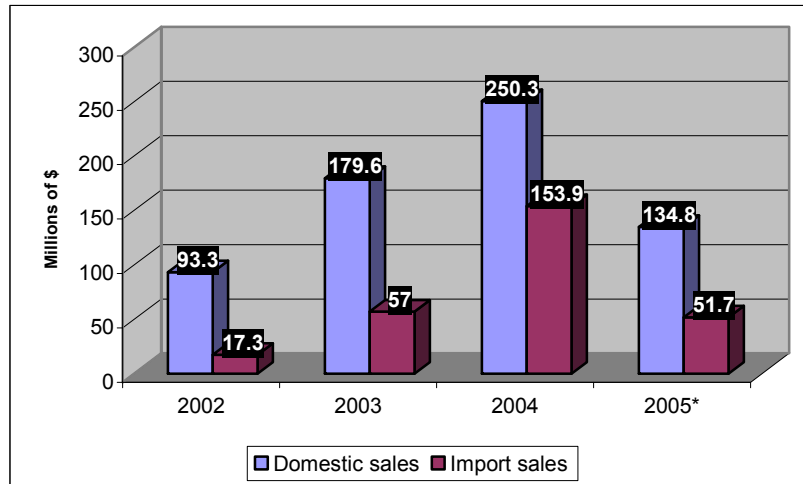


Source: Own elaboration based on data from the INDEC.

Fig. 2.11 Domestic Production of Farming Machinery 1993-2004

According to data recently published by the National Institute of Statistics and Census (INDEC), sales of farming machinery fell 17.5% during the second quarter of 2005, in comparison to the same period of 2004. According to experts in the sector, the drop in sales originated with a 32% drop in sales of imported machinery, which was not compensated by a 6.9% increase in sales of domestic units.

In reference to agro parts, the sales corresponding to the last few years have had an upward tendency, with a clear market superiority of domestically manufactured components. This behavior completely coincides with a higher supply to local manufacturers of parts that are used on self-propelled units.

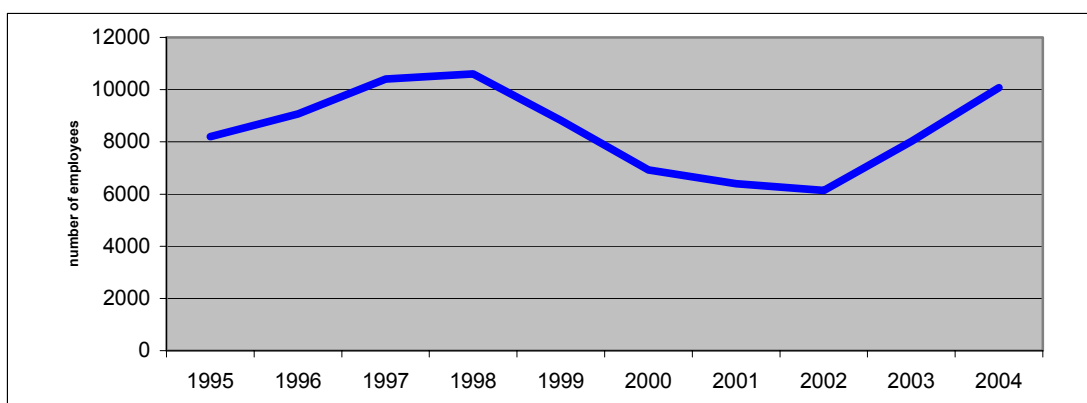


Source: Own elaboration based on data from the INDEC
 * first half of 2005

Fig. 2.12 Agro Parts Sales (domestic and imported), in millions of pesos

(3) Employment

The evolution in the levels of direct employment in the farming machinery sector shows a tendency that follows the trends described in production and sales performance for the sector. Based on information obtained by the study team, formal employment for this sector grew 30% between 1995 and 1998, going from 8,200 to 10,600 formal jobs. As of that year, the level of employment begins to go down in a continuous manner until the year 2002, registering a drop of 42%. However, in 2003 and 2004, there is a very strong recovery, reaching the highest levels ever recorded.



Source: Retirement and Pension Fund System (SIJP) database

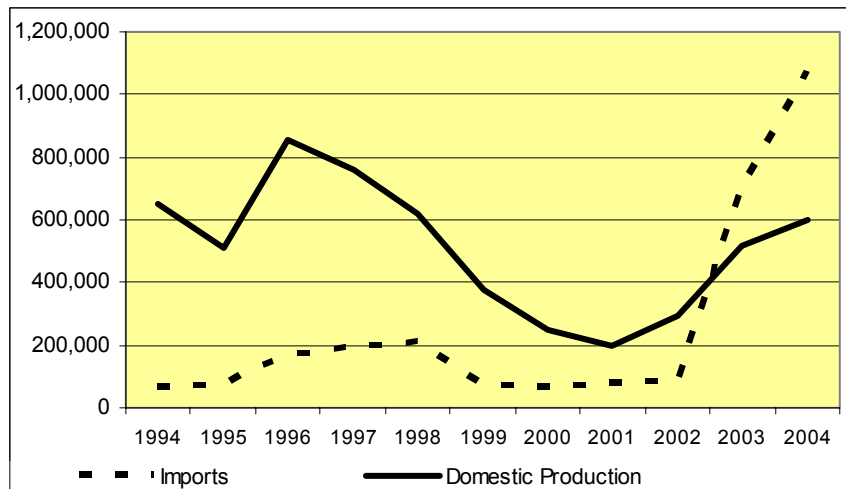
Fig. 2.13 Formal Employment in the Farming Machinery Sector (1995-2004)

CAFMA estimated that the sector was made up by 22,670 workers. They arrived to this figure by taking into account the 15,000 workers employed by farming machinery and agro parts factories, the 1,600 employees who worked for machinery and parts importers, the 2,070 workers employed by manufacturers of machines for regional products and the 4,000 workers employed by dealers.

(4) Foreign Trade

Looking at imports trends of agricultural machinery between the 1990s and the present, two distinguished periods can be recognized, namely before and after the peso devaluation of 2002. Imports in the early 1990s, as in the case of local production, showed strong growth until they reached) \$315 million (CIF value, representing about 40% of the value of local production totaling \$821 million) in 1998. Then they decreased up to 2000, followed by moderate recovery until 2002. In 2003, a explosive growth of 850% was recorded and the value of imports exceeded 1 billion pesos in 2004, far surpassing sales of locally made products.

Recently exports grow steadily but their share of total sales is still very small in the range between 2% and 4%. Most exports are destined to neighboring countries, including Uruguay, Bolivia, Paraguay and Brazil, as well as Europe.



Source: Our own elaboration based on data from CAFMA and INDEC’.

* The data only includes production and import values of tractors, harvesters and seed drills.

Fig 2.14 National Production and Imports of Farming Machinery (in thousands of pesos)

(5) Technological Innovation

Generally speaking, innovation and technological advancement in the farming machinery sector takes in the form of copying models, engineering and applying changes and modifications that respond to the needs of farms.⁵ In this connection, close communication between manufacturers and buyers (farms) is very important. In fact, many machinery manufacturers are also operating farms, allowing more effective communication than the one made through agencies and organizations, such as the Technological Linking Units (UVT) of Universities and Centers of Research and Development.

On the other hand, one of the main obstacles faced by machinery manufacturers is limitations in their design and engineering activities because of the shortage of qualified human resources, at technical and professional levels. In both cases, this situation has been the result of a lack of investment in the training of human resources during the last years. There are also other factors: the low level of professionals joining the production and design areas is also explained because of the presence of family-run businesses where the company’s founder is also a partner, and strongly resists delegating tasks and responsibilities to their employees. Another factor is a relatively small scale of production which usually does not justify the hiring of highly educated professionals.

Thus many companies consider the hiring of engineers or technical school graduates to be

⁵ Hilbert, J. Y Donato de Cobo, G. (2005), Entrevista en el Instituto de Ingeniería Rural, INTA Castelar

secondary or even irrelevant in priority. Among these companies, engineers and technicians constitute a meager 2% of the total workforce. Yet a small percentage of companies –usually the most important ones within each sub-sector- value the hiring of highly trained staff, and consider it to be essential for their future growth. In these companies, engineers account for 3% to 5% of the total workforce, and if technicians are added, the percentage share of technical staff rises up to 8% - 10%.

It can be stated that most companies do not have a research and development division or an industrial engineering and design division. These activities are actions carried out by ad hoc teams, consisting of technicians and skilled workers with a vast experience in the production field, often led by the owners-founders of the company, who does not technical expertise or experience.

As for training, few companies conduct systematic training based on elaborate analysis and planning or have a division in charge of employee training. Leading firms generally foster and finance training activities, mainly focusing on managers, technicians and professionals, but they are not carried out on the basis of systematic planning. Most companies only carry out minimum training, strictly associated with the introduction of new machinery (as provided by manufacturers) or as required by the compliance with laws and regulations.

2.2.4 SWOT Analysis

The results of SWOT analysis of farming machinery and parts industries are summarized as follows.

Strengths

- As Argentine is one of the leading agricultural countries in the world, it has a sizable market and a technological base in the area of agricultural machinery.
- The industries consist of local manufacturers and parts suppliers, with geographical concentration along National Highway Route 9 between Rosario and Cordoba.
- Local companies maintain a predominant position in the local markets for seed drills and dusters.

Weaknesses

- Tractors and cultivators, which constitute relatively large markets, are losing ground to imports.
- Local companies are technologically lagged behind in electronics and other areas.

- Local companies are mainly SMEs with small production capacity and modernization of production systems has not been progressed. With little room for capacity, they have low levels of export capacity.

Opportunities

- Agricultural machinery made in the country still maintains price competitiveness and can find export opportunities if quality is improved and production capacity increases.
- The repair parts and implement markets have further growth potential.
- There is a technological base to develop unique technology such as direct sowing.

Threats

- Competition with imports will intensify if the industry cannot keep up with market expansion or trade is fully liberated.
- The agricultural machinery and parts industries cannot escape from market volatility due to business cycles relating to the international agricultural product market and the purchase of agricultural machinery.
- If the industries fail to make adequate technology investment, they will likely be lagged behind.

The agricultural machinery industry produces a wide variety of products and creates niche market opportunities. Also, local companies can have comparative advantage on strength of the varying market needs according to different types of agricultural products, soil property, and local climate, and other factors. In addition, recent demand growth and the increase in the number of companies that change ownership to younger generations are paving the way to introduce new technology and production methods. At the same time, an industrial agglomeration is present but fails to produce its effect. A new source of growth is therefore investment by individual companies while they need to work together effectively to maximize potential power of the industrial concentration.

2.3 Food Processing Machinery and Parts Industries

2.3.1 Current State of the Industries

The food processing machinery (FPM) and food processing machinery parts subsectors form an integral part of the agro food production chain, where Argentina enjoys a clear competitive advantage. The key to the development of this type of machinery lies in the beneficial potential for the food industry, based on the technological and learning advantages that can be derived from the building of close relationships between producers and users (food processors). The term FPM includes a great variety of machinery ranging from general industrial machinery (e.g., heating or cooling machines, packaging machines) to special machines (dairy equipment, oil equipment, etc). The FPM and FPM parts subsectors, particularly in Argentina, are characterized by marked diversity in terms of types of equipment and customer..

As seen in the case of other industries making capital goods, FPM and FPM parts manufacturers are dominated by SMEs that have grown from the maintenance and repair of equipment that was imported, to the manufacture of machinery, based on imitation and adaptation. These initiatives took a qualitative leap in the 40s and 50s, in a highly protected market that hindered the supply of new machinery and imported spare parts. Leading companies include Bauducco, IMAI, Bisignano, Bosio, Mainar, Manuel San Martín, Alfonso, Chiacchiera, Allocco, Argentel, VMC Refrigeración, and Lito Gonella.(See table 2-4)

Geographical concentrations of the FPM and FPM parts manufacturers are closely linked to the arrival of the first foreign settlers, mainly of Italian origin, who settled near the dairy basin of the Pampa Húmeda (Buenos Aires, Santa Fe and Córdoba, and in Mendoza as well), and to the development of the main industrial belts in those areas of the country (which concentrate a large number of food companies, such as meat-packing plants, oil plants, dairy farms, and dairy industries, among others).

In the 50s and 60s some international-class food processing manufacturers specialized in the manufacture of FPMs established subsidiaries there (NIRO in dairy machinery, De Smet and Buhler in oil machinery, Jarvis in meat-processing machinery). These companies brought to the local market their own production strategies, which supplemented local manufacturing, in a context stimulated by investment protection and promotion policies.

The general conditions in which most PFM companies developed (closed economy, strong internal-market orientation and high macroeconomic instability) determined some of the characteristic features of the production chain until the early 90s. These features including

dominance of vertically integrated companies, a high degree of horizontal diversification, as a mix broadening defensive strategy, and a larger equipment and parts supply capacity to meet diverse demand, as well as technological backwardness in relative terms relating to the manufacture of highly complex equipment that includes microelectronic-based components.

Since the 1990s, the FPM manufacturers have undergone significant changes. On the one hand, they started to face a strong increase in equipment and parts supply levels, as a result of the higher investment levels in the food industries; on the other hand, they also faced a remarkable increase in competition with imported products, which was the result of trade liberalization and the introduction of the fixed exchange rate. The country's participation in MERCOSUR led to a significant dynamism in several sectors of the Argentine food industry (the dairy sector being one of them), and this situation resulted in a significant increase in the investment and the purchase of FPM. In addition, as seen in most Argentine industries, Brazil has become a major destination for some sectors of FPM (particularly milking machines, oil machines, some bread-making machines and packaging machines).

Trade liberalization progressed in the 90s allowed the entry into the country of equipment incorporating world-class, latest technology at preferential tariffs. This has modernized the production system of local companies on the one hand, but it has also encouraged the improvement and upgrading of locally made machines. To a certain extent, tariff reduction not only ensured access to foreign technology, but also to certain local flexible developments of promising results. This is largely explained by the existence of metallurgic-mechanical skills in the memories of the workforce and engineers, resulting from an extensive experience in the import-substitution model. In the area of dry grain milling, equipment was acquired during the 90s, mostly from foreign sources (Switzerland and Italy). However, local suppliers developed partial components and local manufacturers did not show problems to imitate and copy technology after that.

In the industries supplying machinery and service for dairy primary production (dairy farm), the strong technological innovation occurred in the 90s and was based on the adaptation of process technologies, and on the incorporation of certain new equipment, which allowed substantial production and productivity improvements for dairy farms. This segment features an increasing predominant role by a few suppliers, to a great extent subsidiaries of multinationals (Alfa Laval, Westfalia) and some local dairy equipment suppliers (Bossio). Similarly, a considerable part of technology for the dairy industries, particularly those associated with modern technology equipment for processes (ultra-high temperature sterilization, automation, among others) and products (packaging), is concentrated in the hands of a few multinational

companies. Patents relating to these technologies are monopolized by a handful of multinationals.

In the area of oil refining, technologies are widely disseminated and adopted and can be acquired through the purchase of equipment available in the international and national markets. The two largest manufacturers of oil refining process equipment in the world (Lurgi Life Science and DeSmet Rosedown) operate subsidiaries in the country. The local industry mainly supplies peripheral equipment, like transportation, dryers, silos, pumps, and electrical equipment.

2.3.2 Industrial Structure

(1) Major manufacturers in the world

In the world FPM market, leading manufacturers are located in Italy, Germany, France, the United States, and Japan, and they hold a combined share of over 70% of the world production, valued at around \$13 billion, as of 2000 (CENES, 2003⁶).

Table 2.4 Major Producing Countries of Food, Beverage and Tobacco Processing Machinery (OECD countries, Argentina, Brazil and Mexico (in million dollars))

Country	1977 Production	2000 Production	% in 1997	% in 2000
Italy	3,162	3,290	15%	17%
Japan	3,356	3,118	16%	17%
Germany	3,774	2,838	18%	15%
USA	2,858	2,782	14%	15%
France	1,412	1,442	7%	8%
United Kingdom	1,656	1,205	8%	6%
Holland	816	1,012	4%	5%
Spain	811	816	4%	4%
Denmark	775	758	4%	4%
Australia	432	359	2%	2%
Korea	318	278	2%	1%
Sweden	258	275	1%	1%
Austria	239	206	1%	1%
Mexico	145	188	1%	1%
Argentina	251	127	1%	1%
Brazil	365		2%	0%
Totals	20,628	18,819	100%	100%

Source: CENES 2003

⁶ CENES2003; "El sector de maquinaria para la alimentación y su encadenamiento productivo", Centro de Estudio de la Estructura Económica, Facultad de Ciencias Económicas, UBA

These countries are also main exporters in the international FPM market. Major FPM markets exist in countries located in Europe and Asia / the Pacific, as well as the United States. Both Argentina and Brazil that are MERCOSUR members have a relatively low involvement in FPM global production (Brazil produces more). Looking at different FPM segments in the exports of the main world producers, certain specialization trends are observed. The United States, Denmark, the United Kingdom, and Germany show strength in FPM parts, which coincides with the competitiveness advantage they have in production of precision parts. France holds a predominant position in the dairy and wine industry machinery. Brazil has a sound share in the package machinery area. As regards Argentina, its main share can be observed mainly in the oil refining industry.

Table 2.5 Share of the Different Sectors in Exports (in percentage) – Year 2000

Countries	Milk	Wines	Classifiers	Oils	Milling	Others	Parts	Total
Italy	2.7	4.8	1.8	3.6	6.5	62.9	17.6	100
Japan	6.3	0.3	8.3	0.5	6.5	66.0	12.2	100
Germany	6.4	1.3	2.4	1.4	2.2	57.5	28.8	100
USA	3.8	0.9	11.7	3.1	2.4	46.0	32.2	100
France	8.4	7.3	2.4	0.6	1.5	53.4	26.5	100
United Kingdom	12.7	0.3	7.0	3.2	1.2	45.8	29.8	100
Holland	6.1	0.1	8.1	0.6	1.3	53.4	26.5	100
Spain	2.6	2.8	4.6	4.2	2.7	62.1	20.9	100
Denmark	8.1	0.4	4.2	3.1	2.2	50.1	32.0	100
Brazil	1.1	2.0	13.3	2.0	5.8	50.1	25.7	100
Argentina	4.1	2.4	2.9	23.7	1.1	50.5	15.3	100

Source CENES 2003

(2) Characteristics of the industry

The FPM industry supplies a wide range of machinery that is generally highly specialized in processing diverse materials (agriculture, livestock, and fishery) to produce a great variety of foodstuffs.. Fulfilling these requirements implies a greater flexibility of FPM manufacturers, which requires considerable design and engineering efforts, and a low production scale, with a wide product mix. Since equipments process many kinds of food, they are required to meet the high hygienic standard as well as safety standard.

One of the main production factors forming an integral part of the FPM production process is the use of stainless steel, the use of relatively skilled labour, and the use of machines and tooling

(capital goods). Due to the hygiene and safety regulations applied to the food industry, stainless steel is the sector's main raw material. In general, the equipment is made of ordinary steel, and all the pieces that contact the product are made of stainless steel. As for labour, the sector includes welders, lathe operators, project planners, etc. These workers are "skilled labour", and in the recent years it is increasingly difficult to hire workers who meet appropriate levels of training and expertise. This situation due to the decrease in the number of technical middle school graduates.

In Argentina, the FPM manufacturing sector is mostly made up of SMEs, while several multinationals are operating. The information available at the Censo Nacional Económico [National Economic Census] (CNE) of 1994 indicated that there were some 300 FPM manufacturers in Argentina, mainly concentrated in the Greater Buenos Aires area and in the province of Santa Fe (30% of the total national production), the province of Mendoza and the City of Buenos Aires.

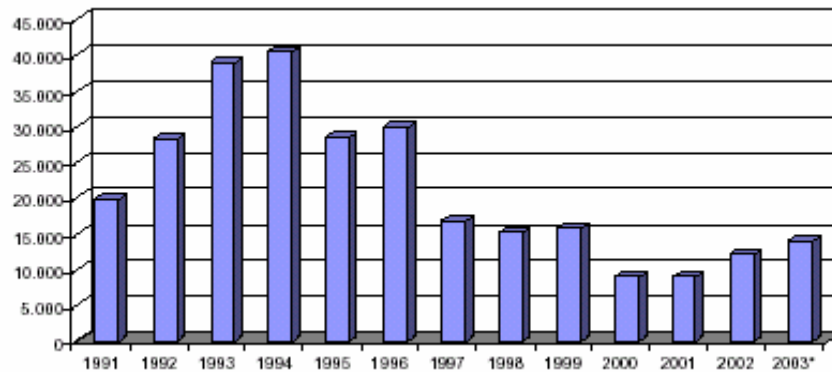
In addition, the industrial records (Registro Industrial de la Nación [National Industrial Record] for the year 2000 indicated a decrease in the number of companies to more than a third those six years before. A notable decrease was not found between 2000 and mid-2002, while FPM demand started to gain ground again in 2003 and 2004. The levels of production of FPM are strongly associated with local foodstuff and agro food production levels. In particular, the change in relative prices due to the devaluation of the Argentine currency in 2002, together with production increases in wines and oilseeds, as well as, seem to work favorably to the change of trend in the evolution of the FPM sector in the recent years.

2.3.3 Sector Performance

(1) Production

Although there is no updated nor itemized information on the FPM and FPM parts production level, information obtained from a capital goods study carried out in the province of Mendoza allows us to consider the evolution of FPM production between 1991 and 2003. According to the data available from the study, the highest levels are found in 1993 and 1994, valued at around 40 million pesos. Production then continued to decline until 2001 and shows moderate growth since then. These figures match those obtained through the National Economic Census of 1994 for that province.

Unit: thousand pesos



Source: Instituto de Desarrollo Industrial Tecnológico y de Servicios
 [Institute for Technological Industrial and Service Development] (2004)
 * 2003 estimated

Fig 2.15 Food Industry Machinery / Gross Production Value

(2) Labour force

Statistics in terms of employment in the sector are also scarce and out of date if there is any. Information available from the 1994 CNE shows that the number of workers in the FPM manufacturing companies for that year amounted to around 4,800 jobs. It also estimates that a considerable reduction of said jobs was to be expected towards the end of the 90s and the beginning of 2000. Also, generally speaking, it can be said that the number of people employed by the industry varies according to the different times of the year, and becomes very high in the grain harvest and post-harvest seasons (August through March), and decreases markedly in the remaining months of the year. During these months, workers are hired for marketing activities and post-sales advice to visit customers to promote new products and repair or service products.

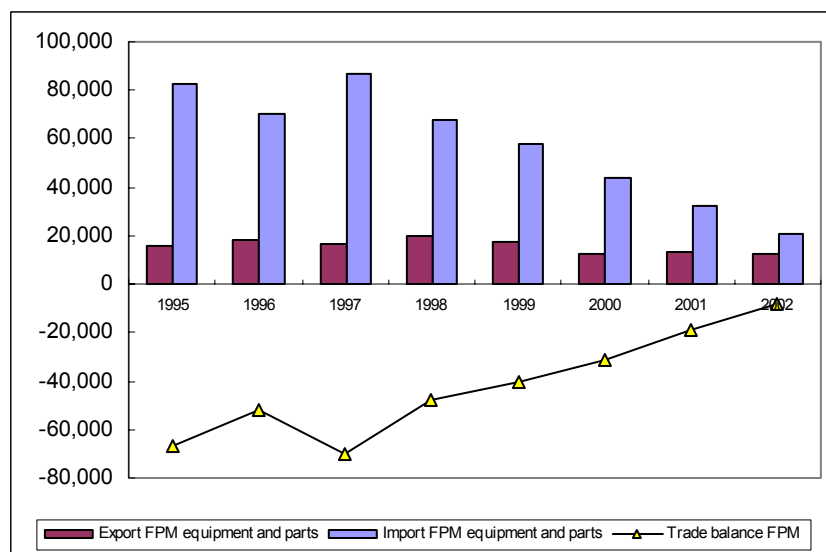
Table 2.6 Employment in FPM Companies (number of workers)

Province	Employment
Córdoba	306
Entre Ríos	116
Santa Fe	1,436
City of Buenos Aires	357
Province of Buenos Aires	1,326
Mendoza	821
Other provinces	418
Total for the country	4,780

Source: National Economic Census 1994

(3) Foreign trade

Argentina has large trade deficits in the areas of FPM and parts. Between 1995 and 2002, imports of FPM and parts significantly exceed exports, although the trade imbalance declines towards the end of the period. The deficit decreased from near 70 million in 1995 to almost 10 million pesos in 2002. This reflects the trend that exports remained more or less constant, while imports decreased significantly.

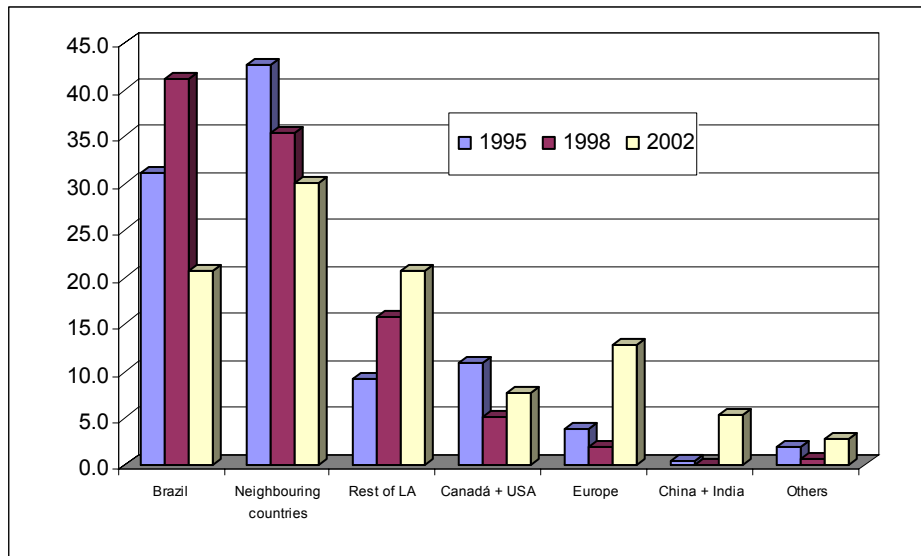


Source: CENES 2003

Fig 2.16 Foreign Trade of Total Argentine FPM (in thousand pesos)

Regarding the destinations of Argentine exports, FPM and parts are mainly sold to the Brazilian market, as well as to the other neighboring countries (Rest of MERCOSUR and Chile). These markets accounted for 70 % of said sales between 1995 and 1998, although the share fell to 50% in 2002. In the same year, the markets of the rest of Latin America had gained more relative importance (20%), as well as China and India (5%), and Europe (13%).

Unit: %

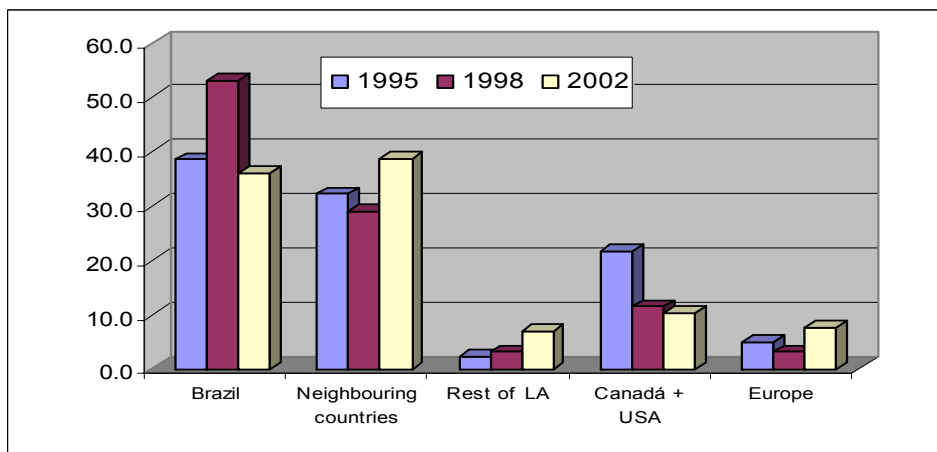


Source: CENES 2003

Fig. 2.17 Destinations of Argentine FPM Exports (1995, 1998 and 2002)

As for FPM parts exports, Brazil and nearby MERCOSUR countries hold a dominant share (between 70 and 80%). The North American market as a whole (Canada and the U.S.) lost ground during the same period (down from 21% to 10 %); while the rest of Latin America and Europe recovered their share in 2002 (7% each)

Unit: %



Source: CENES 2003

Fig 2.18 Destinations of Argentine FPM Parts Exports (1995, 1998 and 2002)

As for imports in 2002, Europe held the largest share (75%), followed by the United States (17%) and Brazil (5%). Basically, this industry is domestic market oriented and only a few

companies aim to serve the overseas market. Most of the business is based on make-to-order production and most orders require installation services. For these reasons, export destinations are primarily limited to neighboring countries that have the same characteristics as the domestic market. In addition, single items in small quantities are sold in the U.S. and Europe.

(4) Technological Innovation

The development of new technologies in the sector is primarily based on expertise acquired through long-time experience. In the area of production of food processing machinery, manufacturers often do the reengineering of used machinery for a similar purpose, adapting it to the customer's needs. This way, designs, processes and products have been constantly improved. These opportunities have enhanced the development of design capability and project of diverse agro food equipment, and these projects have involved technical skilled workers. The manufacturing properties of these FPMs imply important design and engineering activities to fulfil the usage requirements demanded by food production. In order to adequately respond to these needs, companies resorted to skilled human resources, and this meant that their pool of manual and technical workers became an important asset. At the same time, investment by both public and private sectors in the area of human resource development has been limited, partially impeding technological innovation.

Meanwhile, contact between manufacturers and technical support organizations including universities and testing laboratories is very limited. As a result, sources of technological innovation by companies are mainly the customer's complaint or request, and copying and adaptation of technology information that is obtained from trade fairs in and outside the country.

Such innovation efforts relying on past experience and limited human resources are very difficult to keep up with global trends in the area of technological development and advancement, which seem to take the following directions.

- a. Improvement of safety and hygienic conditions in the industry's operation, particularly through automation and other manpower saving measures, by mechanizing the labor-intensive food processing industry and minimizing the involvement of workers.
- b. Development of machinery and sensors that can represent and reproduce human experience and five senses
- c. Development of machinery and a production system that can be adaptive to flexible production of diverse foods

Finally, R&D efforts by individual companies face budgetary and other resource constraints. It

is therefore imperative to promote licensing and joint R&D projects with foreign companies and research organizations.

2.3.4 SWOT Analysis

The results of SWOT analysis of the FPM and parts industries are summarized as follows.

Strengths

- Argentina is the world's leading agricultural country, and as a result, the food processing industry is relatively well developed.
- The industry's production capacity is relatively small but it does not present a significant problem for make-to-order production.
- Availability of engineers and skilled workers in the metalworking sector

Weaknesses

- Insufficient R&D investment
- Absence of a trade association to represent the interest of the industry through exchange of information or lobbying for governments
- The industry's level of concentration is low.
- Lack of technical support and training service organizations specialized in the area of food processing

Opportunities

- The industry has cost advantage to enter the MERCOSUR market.
- There are massive market opportunities in China and India.

Threats

- The globalization trend may induce domestic competition from other countries.
- The industry is sensitive to the general business cycle.

Thus, a future prospect for this sector is not very bright, but some companies seem to establish a relatively stable position in the market by grasping the local needs effectively. As the industry inherently serves the local market, it must make efforts to meet the needs of local food processing companies, while upgrading their technology to international levels in order to complete with imports.

Table 2.7 Major FPM Companies

FPM Company	Location
Argental	Granadero Baigorria (Rosario), Santa Fe
VMC Refrigeración	Rafaela, Santa Fe
Lito Gonella	Esperanza, Pcia. de Santa Fe
OMEGA Industrial Metalúrgica	El Trébol, Santa Fe
Servicios y Explotaciones Industriales S.A. (SEI Ingeniería)	Mitre 6091 - (3000) Santa Fe
Máximo Bauducco S.A.C.I.F.e I	El Trébol - Santa Fe
IMAI - Industria Metalúrgica en Acero Inoxidable	Rafaela, Santa Fe
BISIGNANO S.A	San Carlos Centro, Santa Fe
Bosio (Grupo DeLaval)	El Trébol, Santa Fe
MAINAR	Estomba 150 (1427) Buenos Aires
MANUEL SAN MARTIN S.A.	Mercedes - (6600) - Pcia. Buenos Aires
Alfonso Chiacchiera SRL	Roldan, Santa Fe
Allocco	Villa Gobernador Gálvez, provincia de Santa Fe

Source: JICA Study Team

2.4 Machine Parts Industry

2.4.1 Conditions for Development

The present level of competitiveness of the machine parts industry (manufacturers) is described as follows.

(1) Human resources

The literacy rate in Argentina is close to the average rate for OECD countries and exceeds that in most Latin American countries. While it does not rise as rapidly as before in recent years, the government continues to make efforts through policy implementation relating to the improvement of the labor market and public education. The law covering technical schools and higher education was enacted in September 2005, in an attempt to improve human resources both qualitatively and quantitatively for long-term improvement of competitiveness.

(2) Improved conditions for the manufacturing industry

Capital formation in the manufacturing industry has been recently on the rise due to the increase in investment. At the same time, the percentage share of the manufacturing sector in GDP rose due to the recovery of the national economy, e.g., 21% in 2004. In particular, automobile, metal and machinery industries (including farming machinery and food processing equipment) recorded strong growth, 20% in 2003 and 50% in 2004.

Meanwhile, the volume of agricultural production more than doubled between 1990 and 2004. Major crops were bean, wheat, corn, and sunflower seeds. During the period, the total cultivated land area grew by 40%. Also, mainly due to the eradication of the foot-and-mouth disease, the business environment for the livestock industry improved to create new market opportunities and allow favorable pricing. In addition, expansion of agricultural production created positive impacts on agricultural machinery, food processing equipment, and parts industries.

(3) Cost and input

In 1991, the Argentine government pegged the peso to the U.S. dollar at a 1:1 exchange rate, which has continued until the end of 2001. Some researches estimate that the pegging has distorted a normal exchange rate by more than 20%. The devaluation of the peso was expected in early 2001 to reflect the actual rate, and the exchange rate fell finally to 3.5 pesos per U.S. dollar. According to a study by the Argentine Business University (UADE), this resulted in a 117% increase in the internal cost compared to the end of 2001 and the country's price

competitiveness increased by around 40% in the export market.

Meanwhile, the increase in industrial production had impacts on domestic production costs. Generally, labor, energy and fuel costs declined significantly on a foreign currency basis at the end of 2002 when the devaluation of the peso occurred. As a result, wage levels in Buenos Aires became cheaper than other countries in relative terms. For instance, the average annual wage in Buenos Aires was \$10,500, lower than \$13,400 in Sao Paulo, Brazil, and \$15,500 in Santiago, Chile. Also, the average wage for general factory workers was \$5,100 in Buenos Aires, favorable compared to \$6,500 in Sao Paulo and \$8,300 in Santiago. These differences narrowed to some degree in 2005, but Argentina still maintains the cost advantage.

The country also has cost advantages in the areas of industrial energy sources including electricity and gas, as summarized below.

Table 2.8 Industrial Inputs

Industrial Inputs	Argentina	Brazil	Mexico	Chile
Electric power for industrial use (US\$/ kwh, taxes included)	0.048	0.054	0.058	0.081
Gas for industrial used (US\$/ kcal, taxes included)	75.3	214.2	191.6	n/d
Steel –laminated steel and others- (US\$/ton)	677	754	n/d	n/d
Qualified industrial workers (annual gross salaries in US dollars)	5,100	6,500	n/d	8,300
Engineers (annual gross salaries in US dollars)	10,500	13,400	n/d	15,500

Source:

Argentina, Advantages of Investing Nowadays (2004), Investment Development Agency (ADI), Secretariat of Industry, Commerce and Small and Medium-sized Companies, Ministry of Economy and Production.

Siderar SAIC, accounting books up to June 30, 2005; www.siderar.com.ar

Arcelor, management report, first six months 2005; www.arcelor.com

These cost advantages based on the favorable exchange rate will disappear in due course, especially if any of the neighboring countries, especially Brazil, devaluates its local currency. Even now, the country does not necessarily hold competitiveness over countries outside the region. Thus, while it has cost advantages over at least neighboring countries, Argentine companies should earn true competitiveness. To do so, nationwide efforts should be made to address the following issues, under participation of the public and private sectors.

2.4.2 Major Issues

(1) Shortage of skilled workers

In any country, the industry's strength lies in a long-time accumulation of production skills, especially abundance of skilled workers, whose training takes considerable time to make them a formidable advantage. In Argentina, however, the industry has lost the bulk of skilled workers in the 1990s and in early 2000, when many companies went out of business or laid off many workers. As a result, the industry is unable to recruit skilled workers despite strong demand created by the recent strong increase in work orders.

At the same time, it is difficult to train workers immediately, because many technical high schools that previously supplied a large number of apprentices to factories have been closed down, while technical high schools that are still operated do not have sufficient training facilities and equipment due to government budget restraints. Thus, there is no breeding ground for skilled workers who can support production activities in the future.

The Argentine government is now creating retraining opportunities for unemployed persons as part of its efforts reduce the unemployment rate. For instance, Cordova Province has started such retraining program in cooperation of trade associations. This type of program represents an effective effort on the government side to meet the needs of companies by providing necessary retraining, but it is not suitable for training a large number of persons to skilled workers within a relatively short period. Instead, it is important to develop an industrial workforce from long-term perspectives by building a sufficient number of technical high schools and vocational training institutes.

(2) Insufficient investment

As pointed out earlier, a large number of production machinery and equipment in the country are obsolete and require upgrading or replacement for significant modernization in some cases. However, it is difficult for many companies to borrow funds for equipment upgrading from commercial financial institutions. Besides, a number of manufacturers made substantial capital investment in the 1990s and some are still in debt from such projects. Furthermore, even companies with a relatively strong financial base tend to avoid major investment for future growth because the Argentine economy is still far from stable.

Nevertheless, the present recovery of industrial demand spurs an increasing number of manufacturers to invest in capacity expansion. As they are operated near capacity to meet

increasing demand, some cannot fulfill orders and lose sales. In fact, while assembly manufacturers and international-class parts suppliers have sufficient production capacities, local suppliers serving them become a bottleneck due to an insufficient number of establishments or low production capacity. Thus, capital investment is expected to grow significantly once manufacturers are unfettered from financial constraint and the financial industry redirects lending policy.

(3) Small domestic market

For parts manufacturers, the largest problem is a small and unstable domestic market. They should therefore follow suit of assembly manufacturers and need to be export oriented. Traditionally, local industries have not made much effort to sell their products to the Brazilian market. They need to explore new markets outside the country, not only Brazil, but other Latin American countries and elsewhere such as Europe. To do so, they have to build a flexible production system capable of meeting small lot orders. Government's trade policy also influences export efforts of individual companies, especially promotion of bilateral and multilateral free trade agreements, including MERCOSUR. Also, for the automobile industry, the shift to the flexible production system allows smaller lot production of parts in response to the increase in the number of models.

(4) Shortage of raw materials

The major problem relating to the industrial production chain in the country is unstable supply of raw materials for metal parts, i.e., it is difficult for parts manufacturers to obtain a required quantity of raw materials within a required period. It is often the case that it takes as much as three months to obtain a material, not to mention a delay in delivery. In particular, automotive parts often require special metals which suppliers are limited, even a single company in some markets. Partly due to the lack of competition between materials suppliers and partly due to a small amount of such material consumed by individual small- or medium-sized parts manufacturers, they are generally put in a unfavorable position. Imports from countries outside the MERCOSUR region cost a lot because of high tariff and transportation cost (due to a small quantity). In fact, there are a large number of materials suppliers in Brazil and imports from them entail zero or very low tariff rate, but many Brazilian suppliers do not receive orders from SMEs in Argentina⁷ Recently, an increasing number of SMEs can purchase steel materials from Brazilian suppliers.

Recently, the iron and steel industry increases capital investment for capacity expansion and

⁷ Recently, an increasing number of SMEs can purchase steel materials from Brazilian suppliers.

supply shortages are expected to ameliorate. To change the relationship between suppliers and local parts manufacturers, the competitive environment must be created. This means, market conditions need to be improved to facilitate imports from Brazil and elsewhere. It is important to realize that the development of the metal parts industry is limited even if demand increases, unless the issue of materials supply is solved.

(5) Low level of cluster concentration

In the machine parts industry that achieves a certain level concentration, scales of economy are seldom felt by individual companies. Major reasons include a weak vertical relationship between SMEs and customers as well as suppliers and the lack of a horizontal network of parts manufacturers. As a result, there is the lack of communication between them to disseminate necessary information, and there is little initiative by the parts industry to address common problems, which are largely left to trade associations or governments.

(6) Technological innovation and productivity improvement

Generally, industrial R&D investment in the country remains at fairly low levels. One reason is the lack of domestic competition that seems to discourage the desire to promote technological innovation.

Suppliers serving as subcontractors for assembly manufacturers do not have much opportunity to learn new technology, and their innovative efforts are limited to meet the ad-hoc needs, such as responding to customer complaints or complying with specifications or quality standards of assemblers. They try to copy products on the basis of information obtained from trade shows in various places or receive short-term training from equipment manufacturers at the time of new purchase, but such activities do not lead to continuous innovations. In particular, few efforts have been made for productivity improvement, i.e., improvement of competitiveness. In contrast, Brazil's rapid industrial development, including the automotive parts industry, can be explained by massive direct investment by foreign manufacturers, which has brought not only technology but competition as well.

Meanwhile, companies that manufacture repair parts seem to make R&D efforts by copying original products. Although some of them are not content with mere copying and develop new products in the form of modification, such efforts are not sufficient to improve or maintain competitiveness.

Among the model enterprises to which the study team has been providing guidance, many fail

to utilize production equipment to their maximum capability. In fact, there is a significant room for improvement in terms of equipment use, time management, raw materials, and human resources. At the same time, many companies are in the process of transferring management and ownership to younger generations, and new owners are willing to accept a new system, technology and training to support future growth.

In the wave of globalization, SMEs in the country cannot avoid competition with local and foreign companies, including those in neighboring countries and world-class companies. Needless to say, it is difficult for SMEs to have leading-edge equipment or hire experienced researchers or engineers. However, they can make efforts to improve productivity by understanding its importance, which would then improve the possibility of survival. More precisely, effective use of production management technology increases productivity (final profit versus input, rather than simple production volume or work hours), which in turn improves a financial position and facilitates equipment upgrading, thereby to raise motivation of the company and its employees for future improvement and growth. Once machine parts manufacturers enter this broad-sensed technological advancement spiral, they are expected to catch up with competitors as the industry is endowed with matured technology. What SMEs and their managers should realize is the need for efforts to achieve a long-term goal and the possibility of achieving it through continuous efforts.

Chapter 3

Basic Survey for Formulation of Model Project

Chapter 3 Basic Survey for Formulation of Model Project

3.1 Comparative Study of Five Selected Cities

The following five cities were selected as candidate areas for implementation of model projects by the counterpart.

Province of Buenos Aires	San Martín, Lanús
Province of Santa Fe	Rosario, Rafaela
Province of Córdoba	Córdoba

3.1.1 Brief Review of Industry Profiles

(1) San Martín

The General San Martín County is situated in the metropolitan area of the City of Buenos Aires. Historically known as the "The City of Industry" because of the high economic development brought in by the growth of the Textile Industry and industrial production. San Martín County contributes more than 10% of the Province of Buenos Aires GPI, and even today, it is a very important industrial center.

Approximately 85% of the total companies in San Martín are SMEs. Also, the three most important industries are the Metallurgy Industry (it represents a 23% of the total industrial activity), the Textile Industry (13%) and the Plastic Industry (10%).

(2) Lanús

Lanús County is located in the Province of Buenos Aires in the area known as Riachuelo Basin in the southern part of the Ciudad Autónoma de Buenos Aires (Capital Federal). This industrial zone holds 3.18% of the Province of Buenos Aires total GPI.

At present, this industrial zone concentrates more than 3,500 SMEs distributed among nine industrial sectors. The three most important industrial sectors are, in the first place, leather, shoes and leather goods, followed by the Metal-mechanic Industry and, in third place, the Food Industry. Lanús has become the most important production zone of leather, shoes and leather goods in the country.

(3) Rosario

Rosario is situated in the Province of Santa Fe and is a city of business and historical importance. Rosario holds 45% of the Province of Santa Fe GPI and 5% of the national GPI. The City of

Rosario has a diversified economy, and its main industries are the Food Industry (21% of the economic activity), the Metal-mechanic Industry (18%), and the Equipment and Machine Industry (10%).

In relation to the Food Industry, Rosario also has the biggest cooking oil industrial park in Argentina. Other important industries in the City of Rosario are the Meat Processing and the Dairy Industries. In reference to the Metal-mechanic Industry, it is necessary to mention the importance of agro parts production. This sector gathers more than 10% of the total companies of the city, 63% of which are SMEs.

(4) Rafaela

The City of Rafaela is the administrative center of Castellanos County in the Province of Santa Fe, and is located at 90 kilometers to the south of the City of Santa Fe, the capital of this Province.

The City of Rafaela has a diversified industrial economy. According to information provided for the year 2000, the main industrial activities of Rafaela are the Food and Beverage Industry (27% of the industrial activity), metal products except equipment (16%), auto parts and non-metallic mineral products (10% and 9%).

Historically, the City of Rafaela has been an important center associated with the Dairy Farm Industry, with the production of a great variety of milk and dairy products. For this reason, the Food and Beverage Industry is the sector with higher production levels in the area and is also the reason for the manufacturing of food processing equipment in Rafaela. Among the Chambers and Associations of this area, there are a higher percentage of companies related to the production of milk and dairy processing equipment.

Data taken from the year 2000 "Censo Industrial Local" indicates that more than 85% of the total companies settled in Rafaela are SMEs.

(5) Córdoba

Córdoba is the capital of the Province of Córdoba and the second largest urban center in Argentina after the City of Buenos Aires.

In the City of Córdoba, the Auto parts Industry is very important, and there are four assembly companies (IVECO, Renault, FIAT and Marco Polo). At the same time, it is important to

mention that there are also other important sectors such as the Industrial Equipment, Agro Equipment and Clothes Industries. More than 85% of the companies of these sectors are SMEs.

Finally, it is worth mentioning that Córdoba used to have a Military Airplane Factory. This factory gave rise to several engineers and specialists in matters of aviation. At present, the firm Lockheed Martin does maintenance work for the planes of the Argentinean Air Force.

3.1.2 Statistical Comparison

In order to analyze the three sectors of this study properly, data from INDEC was used and the Clasificación Industrial Internacional Uniforme (CIIU) system was implemented as follows:

- The industrial sector for Equipment and Not Previously Classified Equipment–NPC–(29)¹: in particular, the Agro parts Industry (29219)² and the Food, Beverage and Tobacco Processing Equipment (29250)³.
- Auto parts Industry (34300)

(1) Number of operating companies

According to the 2003 INDEC data, there is now a total of 2,697 operating SMEs companies in the country, in the three sectors analyzed in this report, that is to say, agro parts, food processing equipment and auto parts, and 20 % of all these SMEs companies are located in the five cities studied in this report (Córdoba, Rafaela, Rosario, San Martín and Lanús).

The distribution of these SMEs companies shows that the auto parts has the greatest share among the sectors, concentrating 83% of the companies, while the food and agro parts sectors represent the 8% and 9% respectively, as it is shown in the following graphic:

¹ Based on the CIIU codification (Clasificación Industrial Internacional Uniforme).

² This five-digit code is the nearest method of classification that can be used to refer to the Agro Components and Equipment Manufacturing Sectors, excluding tractors. Based on the CIIU codification, tractors have a different code in relation to the agro parts in general, and the agro equipment in particular. This type of code refers to tractors as a finished product. On the other hand, this five-digit code includes the finished agro equipment (except tractors). The data provided by INDEC excludes tractors; therefore the tractors have not been included in this analysis.

³ In relation to the Food and Beverage Processing Equipment manufacturing sector, all the companies related to this sector are included, that is to say, the parts and components as well as the finished products.

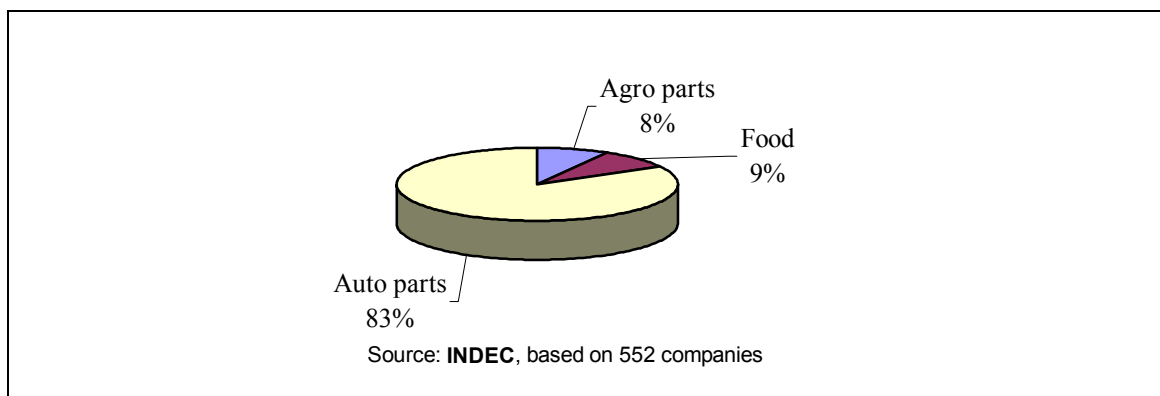


Figure 3.1 Distribution by Sector

On the other hand, at the moment, ADIMRA has a membership of 109⁴ companies which are distributed among the cities studied and the three sectors analyzed. The Chambers and the total number of the members of each one of these chambers are as follows:

- CAFMA (Cámara de Fabricantes de Maquinaria Agrícola), 506 members
- AFYDREM (Asociación de Fabricantes y Distribuidores de Repuestos Motor), 31 members
- Cámara de Industriales Metalúrgicos y de Componentes de Córdoba, 140 members
- Asociación de Industriales Metalúrgicos de Rosario, 400 members
- Cámara de Industriales Metalúrgicos de Rafaela y Departamento de Castellanos, 49 members.

AFAC came into being upon independence from ADIMRA. Even though AFAC is the only association that represents the Auto parts Industry at the national level, many of the Argentinean auto parts companies do not belong to this association. AFAC has a membership of 123 companies, 35 (28.5%) of which are distributed among the five analyzed cities. On the other hand, the information available from the database of the Secretaría de Industria, Comercio y PyME (hereinafter referred to as "Secretaría de Industria de la Nación") indicates that a total of 317 companies, operating in the five studied cities and in the three analyzed sectors, are manufacturing companies.

There are no records available in ADIMRA of any Chamber for the San Martín and Lanús Counties. Therefore, any time that these two counties are mentioned in this report, the information provided will be based on data obtained from INDEC, Secretaría de Industria de la Nación, and CAFMA and AFYDREM, two of the chambers forming part of ADIMRA.

⁴ The number of company members provided for the Chambers and/or Associations are actual numbers. Both Chambers and Associations publish the list of all the companies registered as members on their websites.

Next, each one of the three sectors will be analyzed using data obtained from the above mentioned databases.

1) SECTOR (34300) – PRODUCTION of PARTS, COMPONENTS and ACCESSORIES for AUTOMOBILES and THEIR ENGINES

According to INDEC, there are in Argentina a total of 1,764 auto parts manufacturing companies, and the five cities studied in this report hold approximately 26% of the total national production. On the one hand, among the five cities studied, Córdoba has the highest number with 164 companies, followed by San Martín with 122 auto parts companies. Figure 3.2 indicates the distribution in percentage of the 458 auto parts companies among the five cities studied in this report: Córdoba 35%, San Martín 27%, Rosario 21%, Lanús 11%, and Rafaela 6%.

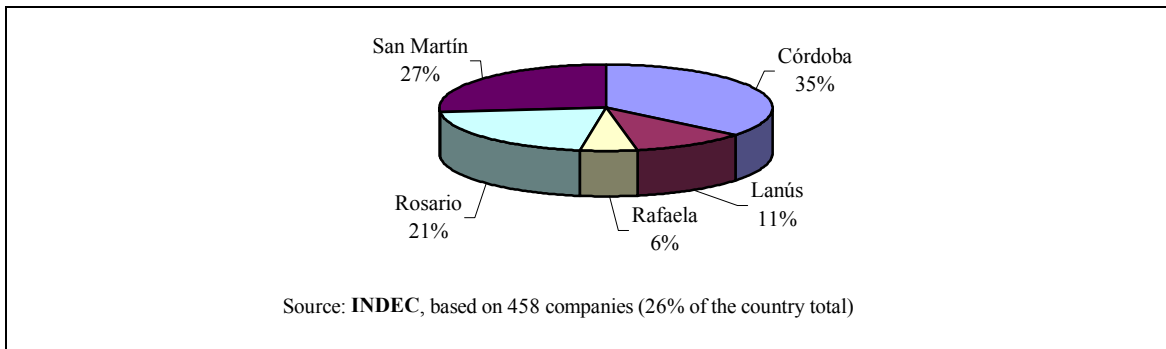


Figure 3.2 Auto Parts Sector (I)

According to information provided by the Secretaría de Industria de la Nación, the auto parts industry hold the highest number of companies registered among the five cities studied, and in the country, the auto parts manufacturing sector has doubled (and at times trebled) the number of companies in relation to the other two sectors analyzed. On the one hand, in Argentina, there are 139 auto parts manufacture companies registered, 35% of which are distributed among the five cities studied. The most relevant point is that Rosario, with 32%, concentrates the highest number of companies. On the other hand, among the rest of the studied cities, a sort of even-handed distribution is observed with a share of more than 15% by each city.

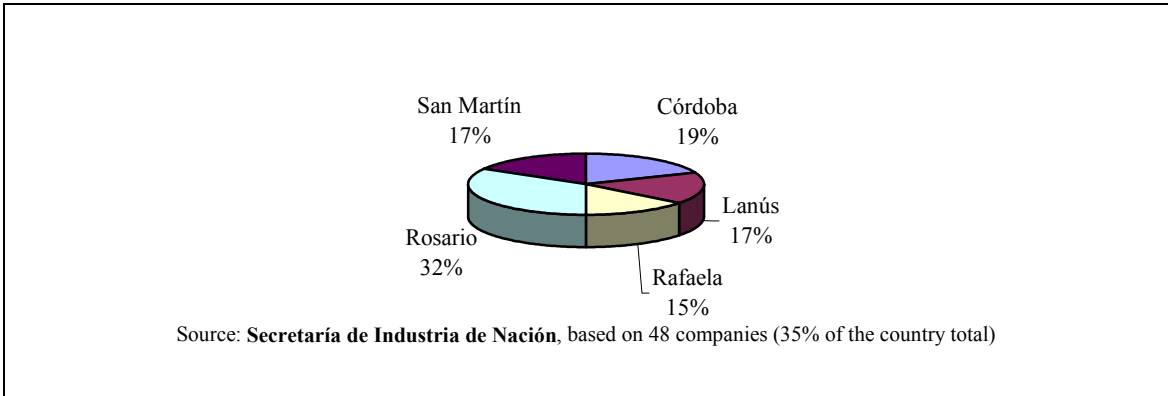


Figure 3.3 Auto Parts Sector (II)

AFAC has a membership of 123 companies of which 28% (35 companies) are distributed among the cities of Córdoba, Rafaela, Rosario, Lanús and San Martín. Based on the consulted data, the city of San Martín shows the highest concentration of companies in the auto parts sector with 43%. The city of Córdoba is second in order of importance with 26%. In spite of the importance shown by Rosario in the other two sectors, in the auto parts sector, the city of Rosario is in third place with 14%.

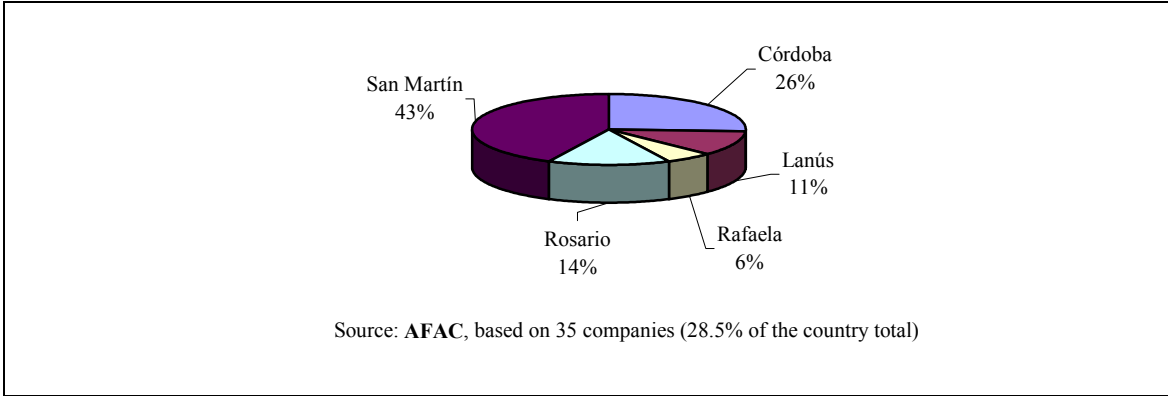


Figure 3.4 Auto Parts Sector (III)

2) SECTOR (29219) – PRODUCTION OF AGRO AND FOREST EQUIPMENT, except Tractors

According to INDEC, only a 6.4% of the total of Argentinean agro parts manufacture companies accounted for in this study are distributed among the five studied cities. This distribution indicates that Rosario shows the higher concentration of companies, 53% of the total in the production sector, followed by Córdoba, in second place, with 22%, and Rafaela, in third place, with 17%. Finally, the cities of San Martín and Lanús, with 4% each, show a low concentration of companies in this sector.

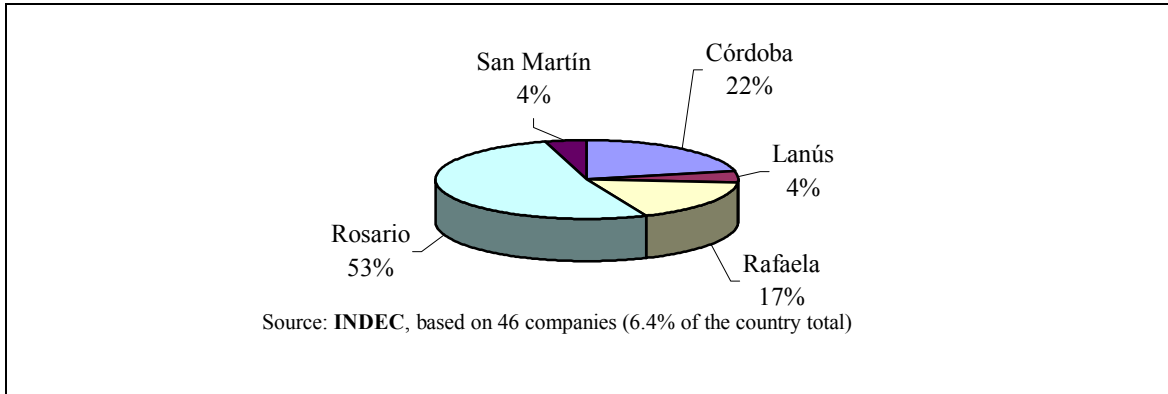


Figure 3.5 Agro Parts Manufacturing Sector

Therefore, the two main cities, Rosario and Córdoba, have 24 and 10 agro parts manufacturing companies respectively, followed by Rafaela with 8 companies. The cities of GBA, Lanús and San Martín have only 2 companies each.

In order to analyze the data obtained from ADIMRA, special consideration was paid to CAFMA, Cámara de Industriales de Córdoba and Asociación de Industriales de Rosario. The Asociación de Industriales de Rafaela was excluded from this study because no data was available for the agro parts manufacturing sector. Based on the combination of information available from the three sources mentioned above, there are a total of 25 agro parts manufacturing companies divided between the cities of Rosario and Córdoba only. This means that there are no records of agro parts manufacturing companies for the cities of Rafaela, Lanús and San Martín.

According to the three sources consulted, CAFMA has the greatest number in membership with 506 companies. The data on CAFMA is based on information obtained from the Chambers of Córdoba and Rosario. At the Chamber of Córdoba, there are three (2%) companies registered over a total of 140 members, while, in Rosario, Asociación de Industriales has 18 (4%) agro parts manufacturing companies over a total of 400 members.

3) SECTOR (29250) - PRODUCTION OF EQUIPMENT for THE PROCESS of FOOD, BEVERAGE and TOBACCO

The INDEC database, the only source consulted that indicated the presence of companies in the five cities studied, shows the highest distribution of companies in the city of Rosario with 56% (27 companies). The other 44% is distributed among Córdoba with 17%, followed by San Martín with 13%, and in third place the cities of Rafaela and Lanús. At the national level, there is a 22% of the food processing equipment manufacturing companies concentrated in these

five cities as is shown in the following graphic:

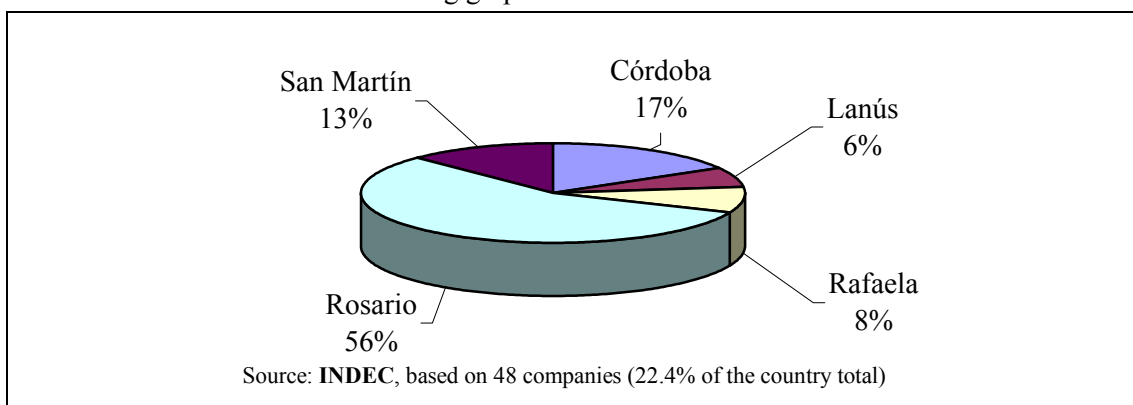


Figure 3.6 Food Processing Equipment Sector (I)

Finally, according to the data provided by the Secretaría de Industria de la Nación, over a total of 15 companies, Rosario shows again a clear supremacy over the other four cities, concentrating 8 companies, followed by Rafaela and Lanús with 3 companies each. There is only one company in San Martín and no records for this sector were found in Córdoba. This distribution, in general, means that at the national level the concentration of companies is 26%, and it is graphically shown as follows:

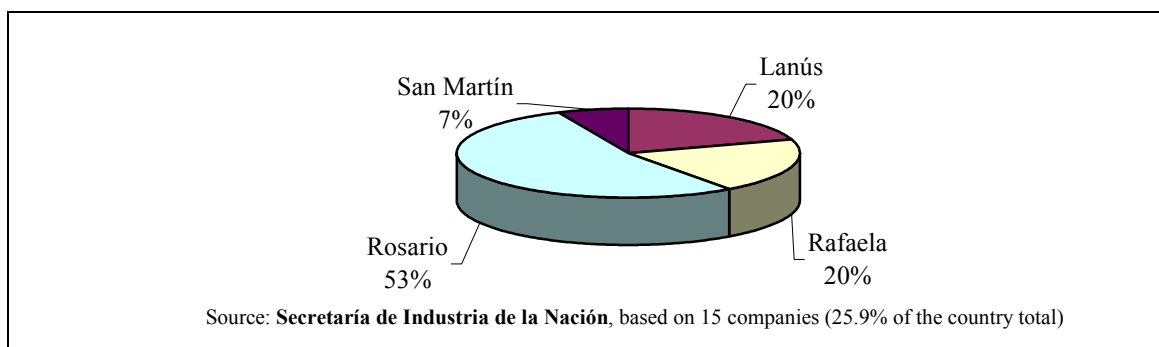


Figure 3.7 Food Processing Equipment Sector (II)

As a conclusion and taking into account the three sources consulted, it can be said that Rosario is the city with the highest concentration of food processing equipment sector, followed by Rafaela in importance.

(2) Number of employees

The number of employees working in the three sectors was analyzed based on the data provided by INDEC, as it is shown in Table 3.1. Nevertheless, this data is for each one of the provinces; therefore the number of workers has not been specified by city. The data includes the number

of and the total workers of the GBA and the Provinces of Córdoba and Santa Fe. Also, it is provided the information gathered during the 1994 National Census and the Argentinean total industrial labor force as well.

Table 3.1
Workers of the Manufacturing Sectors Based on the 1994 Censo Nacional Económico

Province	Sector	Total			Salaried Employees			Non Salaried Employees		
		Total	Men	Women	Total	Men	Women	Total	Men	Women
GBA	Agro parts	299	271	28	212	191	21	87	80	7
	Food Proc. Equipment	987	917	70	823	768	55	164	149	15
	Auto parts	16,709	15,177	1,532	15,470	14,114	1,356	1,239	1,063	176
	Total employees GBA	328,342	---	---	286,909	---	---	41,433	---	---
Córdoba	Agro parts	3,332	3,179	153	2,704	2,587	117	628	592	36
	Food Proc. Equipment	204	190	14	148	138	10	56	52	4
	Auto parts	6,287	6,040	247	5,660	5,502	158	627	538	89
	Total employees Cba.	82,609	---	---	68,170	---	---	14,439	---	---
Santa Fe	Agro parts	3,416	3,225	191	2,652	2,526	126	764	699	65
	Food Proc. Equipment	1,557	1,472	85	1,377	1,313	64	180	159	21
	Auto parts	5,021	4,588	433	4,518	4,145	373	503	443	60
	Total employees SFe.	102,133	---	---	85,053	---	---	17,080	---	---
GBA Córdoba Santa Fe	Agro parts	7,047	6,675	372	5,568	5,304	264	1,479	1,371	108
	Food Proc. Equipment	2,748	2,579	169	2,348	2,219	129	400	360	40
	Auto parts	28,017	25,805	2,212	25,648	23,761	1,887	2,369	2,044	325
	TOTAL	37,812	35,059	2,753	33,564	31,284	2,280	4,248	3,775	473
Country Total	Agro parts	8,754	---	---	5,940	---	---	2,814	---	---
	Food Proc. Equipment	4,780	---	---	4,200	---	---	580	---	---
	Auto parts	37,985	---	---	34,444	---	---	3,541	---	---
	TOTAL	51,519	---	---	44,584	---	---	6,935	---	---
TOTAL ARGENTINA		1,061,528	---	---	910,125	---	---	151,403	---	---

Source: INDEC

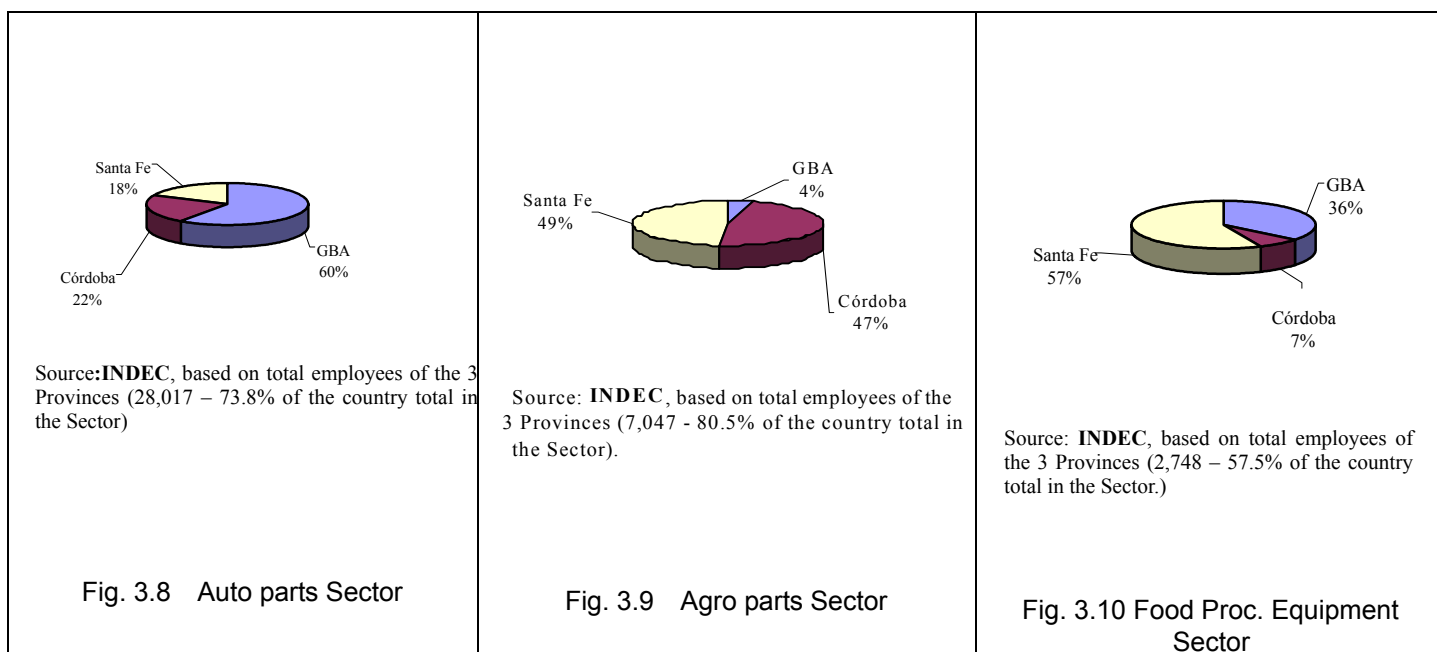
First, in the agro parts sector, the three above mentioned provinces hold 80.5% of the total Argentinean labor force, showing a higher concentration of workers in the Agro equipment and Agro parts and components sectors. The Auto parts sector is in second place, also showing a high concentration of workers in the three provinces; with a 73.8% of the total Argentinean labor force of this sector. In third place, the food and beverage processing equipment sector also shows a high concentration with 57.5% of the total labor force of the three provinces.

According to the data obtained in relation to the number of employed workers, it can be inferred that the three analyzed sectors are highly concentrated in the above mentioned three provinces.

Also, this data shows that Córdoba and Santa Fe are the two provinces in which the agro parts industry predominates. Nevertheless, even if Santa Fe concentrates a higher number of workers than Córdoba, the difference is minimal with no more than 100 (one hundred) employees more in Santa Fe than in Córdoba. If the total number of salaried employees is analyzed the difference favors the Province of Córdoba.

The labor force of the food processing equipment industry is a 88% salaried labor force, and it is concentrated in the Province of Santa Fe, which has a big margin in relation to the other two provinces. Córdoba is the province with less number of industries and quite a low number of workers in this sector, employs 204 workers.

Finally, with quite a margin in difference over the other two provinces, GBA concentrates the highest number of workers in the Auto parts sector. The percentage of the GBA is 60%, if the total number of workers of the three provinces in this sector is considered. The Figures 3.8, 3.9 and 3.10 show the distribution of employees in these three sectors, based on the total number of workers employed by this sector in each one of the three provinces.



3.1.3 Summary of Results

(1) San Martín City

The city has many automotive parts manufacturers because there was previously an assembly plant. It is confirmed by data collected for the study. Similarly, presence of many food processing machinery manufacturers suggests the city's proximity to the largest consumer

market, Buenos Aires, and the resultant presence of food manufacturers. On the other hand, not many manufacturers of agricultural equipment parts are located in San Martin despite of the fact that Province of Buenos Aires is a major agricultural area, probably because the city is principally an industrial area. Another trend relating to the city is the relocation of an increasingly number of manufacturers to suburbs due to deterioration of public safety in the city as well as difficulty in land acquisition. In addition, many companies have gone out of business since the 1990s.

(2) Lanús City

The city is characterized by an agglomeration of SMEs, which mainly belong to the leather and shoes industry, and there is no significant concentration of the metalworking industry due to the lack of presence of major machinery manufacturers. The city accounts for little over 3% of GDP of the Province of Buenos Aires, which is therefore much smaller than San Martin that represents 10% of the provincial GDP.

(3) Rosario

Data analysis indicates that the city serves a major industrial area in all the three sectors. In particular, there is an agglomeration of agricultural machinery manufacturers along Highway No.9 between Rosario and Córdoba, and many of them are located within the Province of Santa Fe. Also, an engine plant of John Deree, which is a world-class tractor manufacturer, is operated in the city of Rosario. The food processing machinery industry seems to have developed to take advantage of presence of loading facilities for various agricultural products in the city area, such as flour and cooking oil. As for automotive parts, the city does not have as heavy concentration of suppliers as Córdoba and San Martin, but future growth can be expected in consideration of presence of various automakers, namely a GM plant in the city, and Toyota (Zarate), Ford, and Volkswagen (Pacheco) along Highway No.9 between Rosario and Buenos Aires.

(4) Rafaela City

The city lags behind other cities in terms of a surrounding market size and the level of SME concentration. However, data analysis indicates that its level of industrial concentration in agricultural machinery and food processing machinery ranks next to Rosario, suggesting that these industries occupy an important position in the city area, in comparison to its small population size. In particular, manufacturers of food processing machinery for dairy products have established their position in the area to reflect highly developed dairy farming in the city and its vicinities. Successful industrial growth also owes to the municipality's enthusiasm

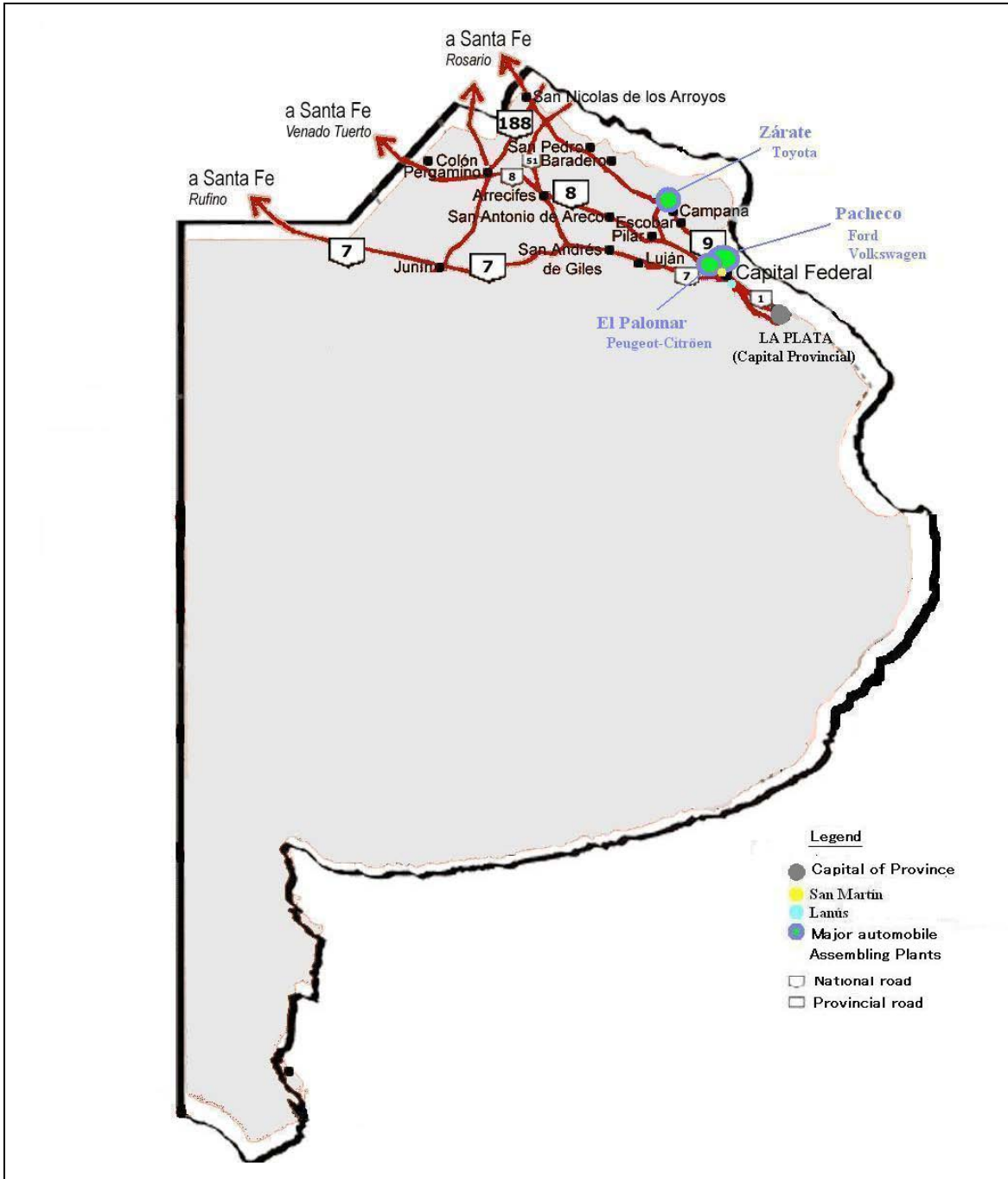
about industrial development and seems to be driven by vigorous activities of local trade associations and the chamber of commerce and industry.

(5) Córdoba City

The city has a concentration of automotive parts suppliers because it was the birthplace of the country's automobile industry and various automakers have been operating here since early times. In particular, there are a large number of established tier-one suppliers with long history. However, the city has largely lost its legacy status as the country's auto city; assembly plants operated in the city are engaged only in assembly of engines or produce a relatively small number of assembled cars. On the other hand, production of agricultural machinery and its parts seems to be maintained at a higher level than that shown in available data, because some automotive parts suppliers also make agricultural machinery parts. Finally, the food processing machinery industry is not highly developed despite of presence of an international confectionary company that operates a factory in a nearby area.

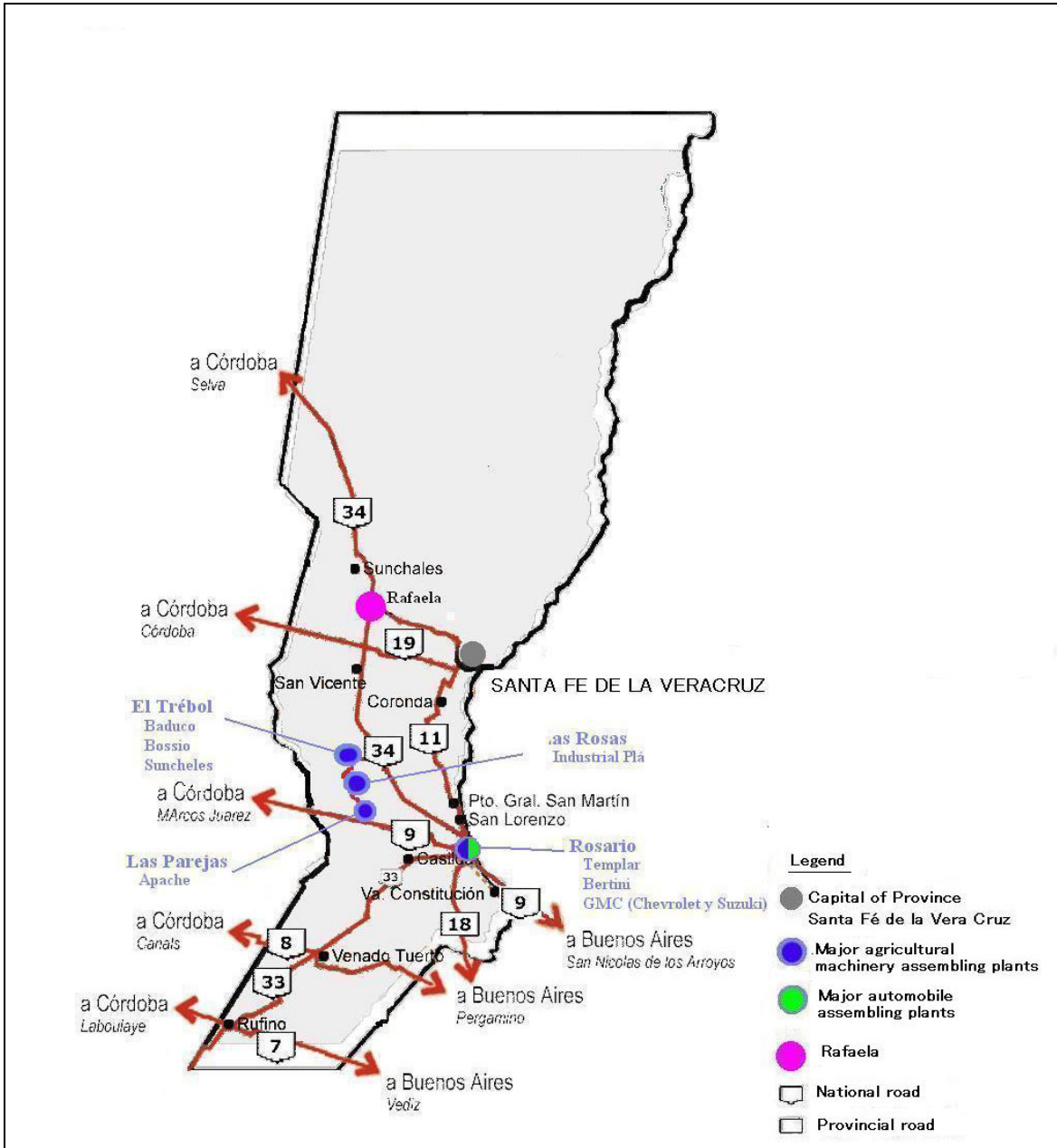
3.1.4 Location of Major Assembling Plants

Figure 3.11, 3.12 and 3.13 show the location of major assembling plants of automobiles and agricultural machinery in Provinces of Buenos Aires, Santa Fe and Córdoba.



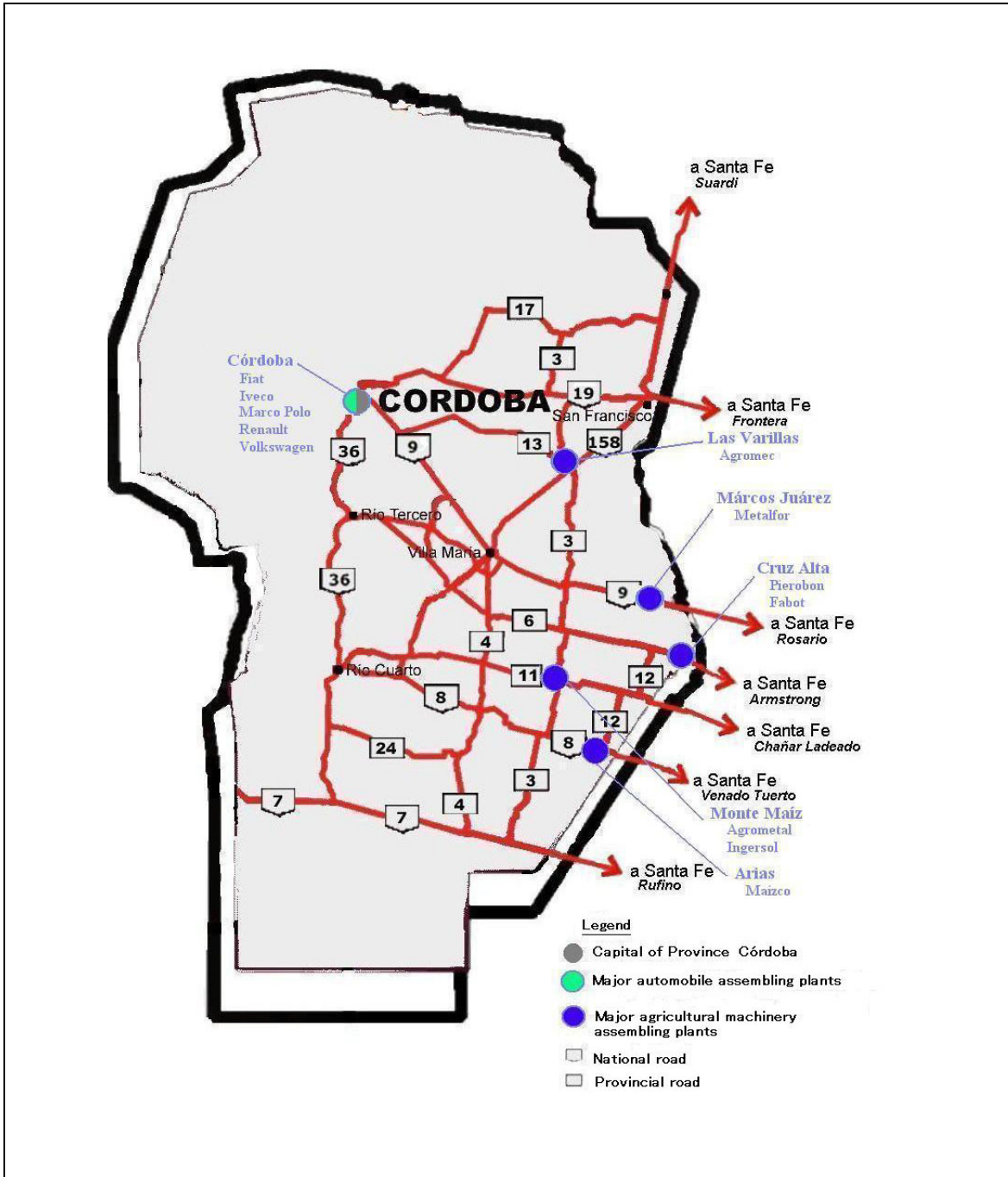
Source: JICA Study Team

Fig. 3.11 Major Assembling Plants (Province of Buenos Aires)



Source: JICA Study Team

Fig. 3.12 Major Assembling Plants (Province of Santa Fe)



Source: JICA Study Team

Fig. 3.13 Major Assembling Plants (Province of Córdoba)

3.2 Questionnaire Survey

3.2.1 Outline

(1) Objective

1. To understand the current state of external support for machine parts manufacturers in Argentine and major issues facing them.
2. To understand types of external support needed by machine parts manufacturers.

(2) Subject of survey: Mechanical parts manufacturers in the study area

Machine parts manufacturers to which the questionnaire was distributed were selected in cooperation of INTI local centers and local industries. Distribution and collection of questionnaires and data input were commissioned to local consultants. Collection was made by personal visit, facsimile or e-mail.

1) Types of manufacturers

- Automotive parts manufacturers
- Agricultural equipment parts manufacturers
- Food machinery parts manufacturers

2) Corporate data sources

- Directory of “Asociación de Fábricas Argentinas de Componentes, AFAC”
- Directory of “Administración Federal de Ingresos Públicos, AFIP”
- Directory of “Centro de Desarrollo Empresarial de Rafaela”
- Directory of “Cámara de Industriales Metalúrgicos y de Componentes de Córdoba”
- Directory of “San Martín EPSAM”
- Directory of “Feria Internacional de Córdoba, FICO”
- Other company lists furnished by INTI

3) Number of companies that responded the survey: 240

(3) Survey period

The questionnaire was distributed in early October 2004 and it took around one month to complete collection.

(4) Survey area

Province of Buenos Aires

- Lanús City
 - San Martín City
- Province of Santa Fe
- Rosario City
 - Rafaela City
- Province of Córdoba
- Córdoba City

(5) Survey items

- Company size and business profiles
- Markets for products (parts and services)
- Supplier’s position
- Need for external support, desirable field, experience, and evaluation
- Knowledge on fundamentals of business/production management, and implementation status
- Interest in simplified corporate diagnosis and workshop

3.2.2 Analysis of Survey Results

(1) General profiles of responding companies

1) Number of respondents

Classification of respondents by province and city is summarized as follows.

Table 3.2 Classification of Respondents by Province and City

Province	City	Number of Companies	%
Buenos Aires		36	15%
	Lanús	14	6%
	San Martín	22	9%
Córdoba		90	38%
	Córdoba	90	38%
Santa Fe		114	48%
	Rafaela	58	24%
	Rosario	56	23%
Total		240	100%

Source : JICA Study Team

The number of respondents in Buenos Aires is relatively small compared to Córdoba and

Santa Fe, because many companies in the list were not found at their contact addresses (probably because they went out of business and relocated) or rejected to respond. In fact, no response was obtained from 135 companies in San Martín and 88 in Lanús for the above reasons.

2) Classification of respondents by sector

Automotive parts manufacturers accounted for the largest share, while agricultural machinery and food processing equipment parts manufacturers represented more or less the same percentage. Note that the total number of respondents shown below is larger than the sum of various sectors, because some companies serve as parts suppliers for more than two product categories. For instance, 44 out of 145 companies (30%) classified as automotive parts suppliers make automotive parts only, and 20 out of 63 (32%) agricultural machinery parts suppliers and 21 out of 64 (33%) food processing machine parts suppliers are specialized in the respective product category.

Table 3.3 Classification of Respondents by Sector

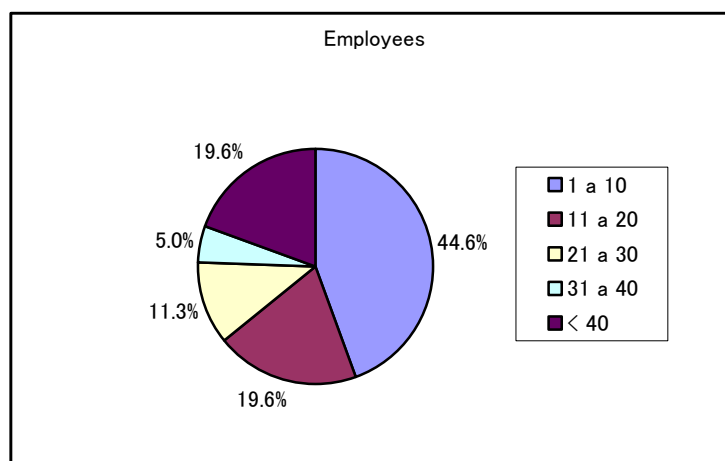
Province	City	Automotive Parts	Agricultural machinery parts	Food processing equipment parts	Electronic parts	Others	Unknown
Buenos Aires		25	1	5	6	25	0
	Lanús	9	0	2	3	6	0
	San Martín	16	1	3	3	19	0
Córdoba		70	36	20	17	30	0
	Córdoba	70	36	20	17	30	0
Santa Fe		50	26	39	7	59	3
	Rafaela	13	7	30	6	41	2
	Rosario	37	19	9	1	18	1
Grand total		145	63	64	30	114	3

Source : JICA Study Team

For this survey, a list of companies was prepared in proportion to the subject sectors, so that the number of responses shown here does not represent the industrial structure in each city. Geographical distribution of respondents indicates that automotive parts manufacturers hold a dominant share in San Martín while there are few agricultural machinery parts manufacturers. In Córdoba, 78% of respondents manufacture automotive parts to reflect local concentration of the automobile industry. Respondents in Rafaela are dominated by food processing equipment parts manufacturers, while other industries include food processing equipment including refrigerators. In Rosario, agricultural machinery parts manufacturers account for a high percentage probably because the agricultural machinery industry forms a cluster. Thus, the geographical distribution appears to reflect characteristics of local industries in each city.

3) Number of employees

The average number of employees of responding companies was 27. Micro enterprises with 10 or less employees accounted for 45% of total. The high percentage of MEs appears to reflect the fact that many manufacturers lost competitiveness and downsized in the 1990s due to the appreciation of the peso as a result of the Conversion Act. According to the local consultant that conducted the survey, some micro enterprises continued their business by outsourcing a certain part of the production process.



Source : JICA study team

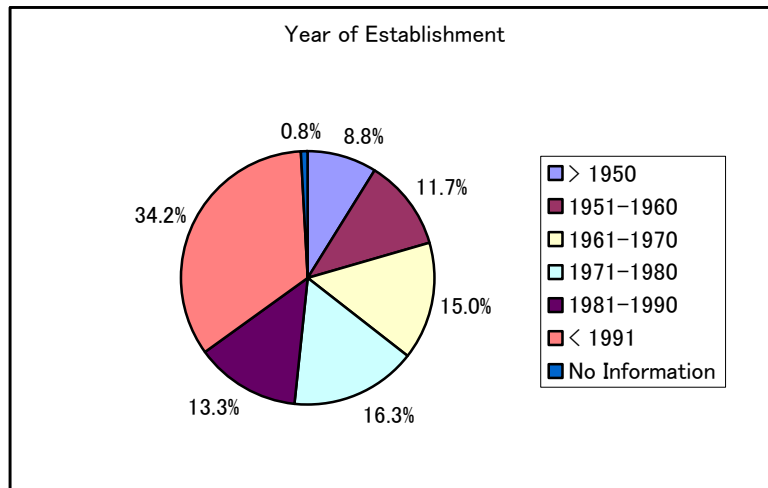
Fig. 3.14 Number of Employees

In terms of employment size, there is no significant difference between cities. On the other hand, approximately 60% of food processing machinery parts manufacturers were micro enterprises, higher than the overall average. Companies having 40 or more employees are largely automotive parts manufacturers. Twelve companies have 100 or more employees, of which ten companies make automotive parts, one agricultural machine parts, and two food processing equipment (of which one company also makes automotive parts).

4) Year of establishment

34% of companies that responded the survey were established between 1991 and 2004, and of which 24 companies were established after 2000. This does not necessarily mean that new startups are very active, and the above companies presumably include those that were originally operated by other owners and acquired by other companies due to difficulty.

As for geographical distribution, the average year of establishment is 1970 for respondents in Lanús, 1974 for San Martín, 1977 for Rafaela, 1980 for Córdoba. On the other hand, there is little difference in the year of establishment among sectors.

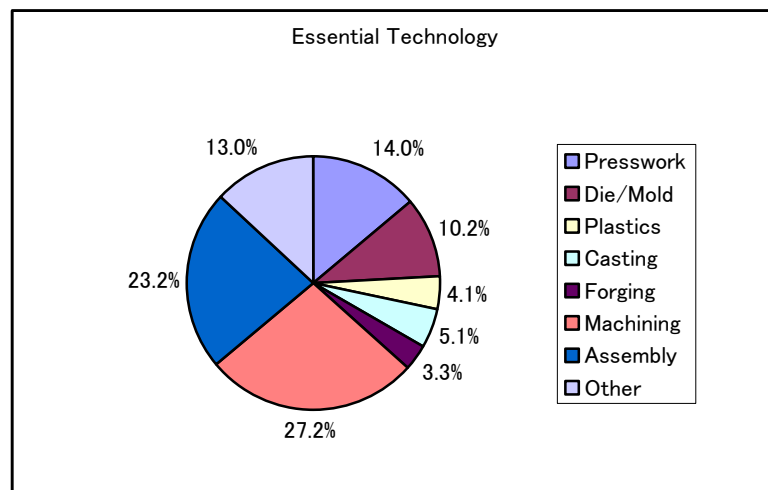


Source : JICA study team

Fig 3.15 Year of Establishment

5) Classification by essential technology

Overall, more than one half of the responding companies (56%) are engaged in machining, followed by assembly (48%), presswork (29%), and die/mold making (21%). There is little geographical difference. On the other hand, in terms of sector, 60% of automotive parts manufacturers, higher than the average, are engaged in machining operation. Among food processing equipment parts manufacturers; there are a relatively small number of companies engaged in casting and forging operations.



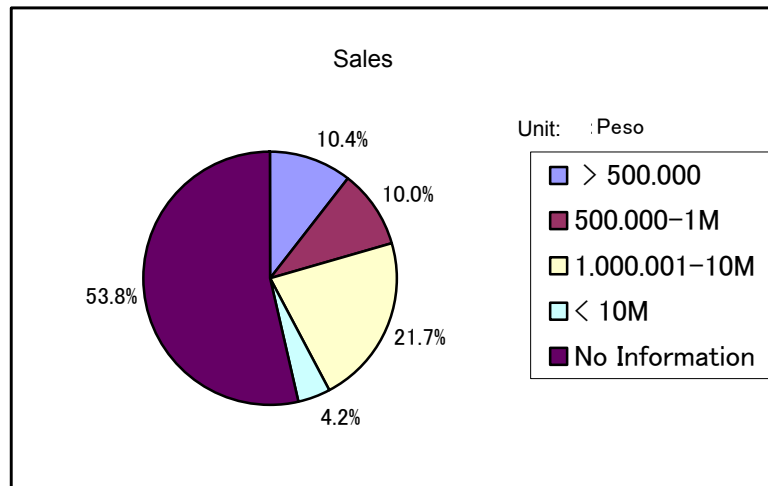
Source: JICA study team

Fig. 3.16 Essential Technology

6) Sales

Unfortunately, the majority of respondents did not report annual sales. The average sales of

companies that reported them are approximately 1.8 million pesos and the majority of them ranged between 1 million and 10 million pesos. 10% or more of the total reported 500,000 pesos or less. The average sales per employee are approximately 20,000 pesos.



Source : JICA study team

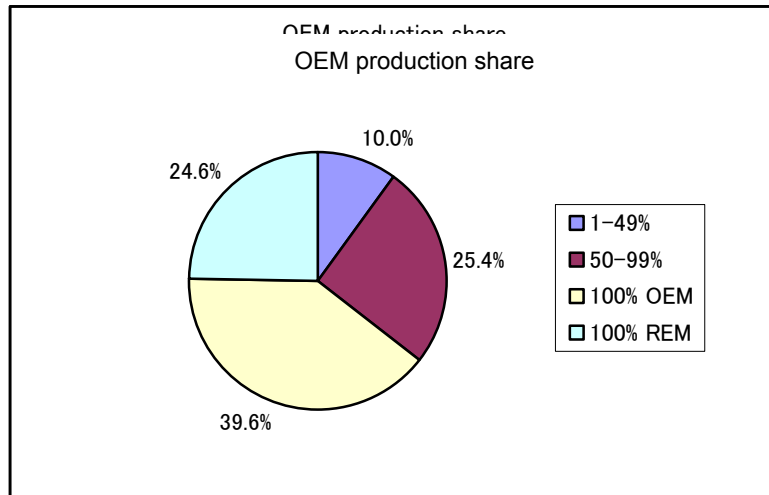
Fig. 3.17 Sales

Geographically, in Córdoba, the percentage of companies with sales of 500,000 pesos or less is below the overall average and those between 1 million and 10 million pesos exceeded the average. As for companies in Santa Fe, 6 out of 61 companies that reported annual sales showed 10 million pesos, a higher percentage than the overall average.

Sector-wise, a higher share of food processing equipment parts manufacturers than other sectors reported 500,000 pesos or less, while a high percentage of automotive parts manufacturers reported 1 million pesos. This reflects size distribution in terms of the number of employees, and food processing equipment parts manufacturers are relatively small, while automotive parts manufacturers are larger than the overall average.

7) Major markets

Three out of four companies make and sell OEM products. 95 companies (40% of total) supply OEM products only and 59 (25%) are specialized in aftermarkets. The results reflect that the questionnaire survey focused on manufacturers of OEM products. Note that the percentage shares of OEM manufacturers in agricultural machinery and food processing equipment parts sectors are higher than that of automotive parts manufacturers serving the OEM market.



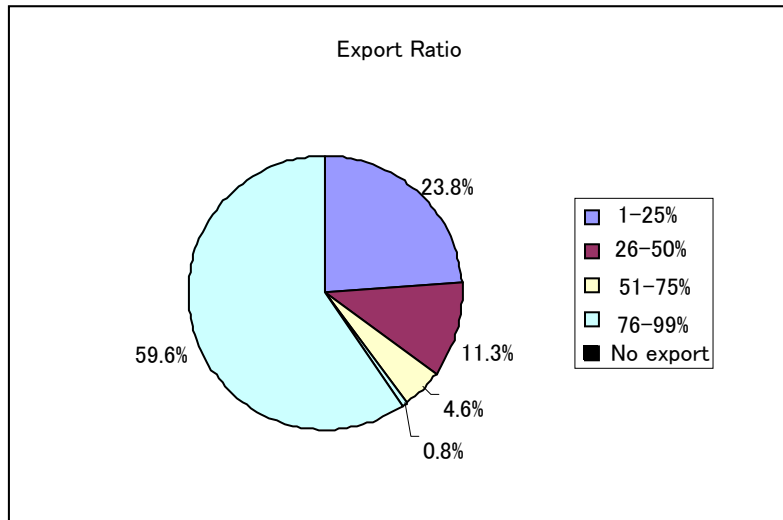
Source : JICA study team

Fig. 3.18 OEM Production Share

8) Export

Around 60% of the responding companies supply their products to the domestic market only. The remaining 40% make exports in various forms, but exports represent a relatively low percentage of total sales. Sector-wise, higher percentages of agricultural machinery and food processing equipment parts manufacturers target the domestic market only than automotive parts manufacturers. Note, however, that the bulk of parts supplied to the OEM market seem to be exported by assembly manufacturers as part of finished products. If such indirect exports are included, the ratio of exports by machine parts manufacturers would increase further.

Thirteen companies earn 50% of annual sales from exports, and nine companies are specialized in OEM production. Several companies appear to supply products to assembly manufacturers in Brazil, serving as a primary example that parts manufacturers are incorporated into part of assemblers' strategy taking advantage of MERCOSUR.



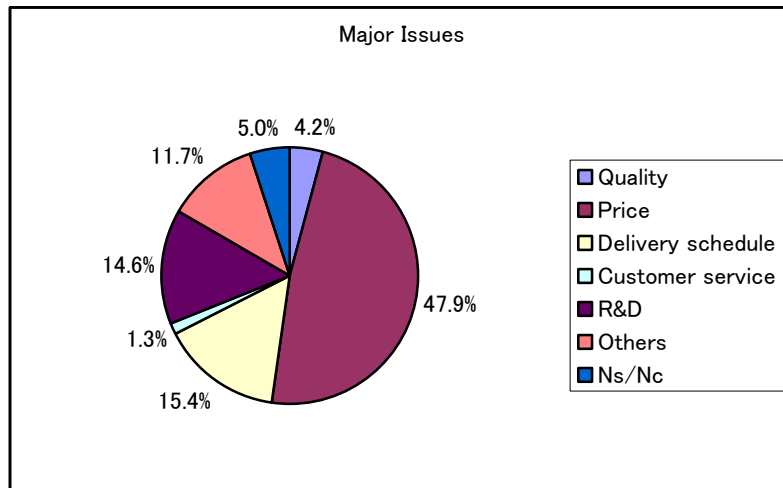
Source : JICA study team

Fig. 3.19 Export Ratio

(2) Competitiveness

1) Major issues relating to competitiveness

The majority of companies quoted price as the major issue, followed by delivery schedule and R&D (15% each). Only two companies considered customer service as the major issue, and ten companies cited quality. The answer was concentrated on price as the question asked respondents to select the most important issue. Regionally, the pattern is similar in all the cities, except for Córdoba where a higher percentage of respondents cited price as the major issue, whereas less selected quality. On the other hand, a high percentage of respondents in Santa Fe cited quality. Similarly, all the sectors cited price, and a higher percentage of automotive parts manufacturers than other manufacturers selected delivery schedule. R&D was the second choice for food processing equipment parts manufacturers and quality for other manufacturers.

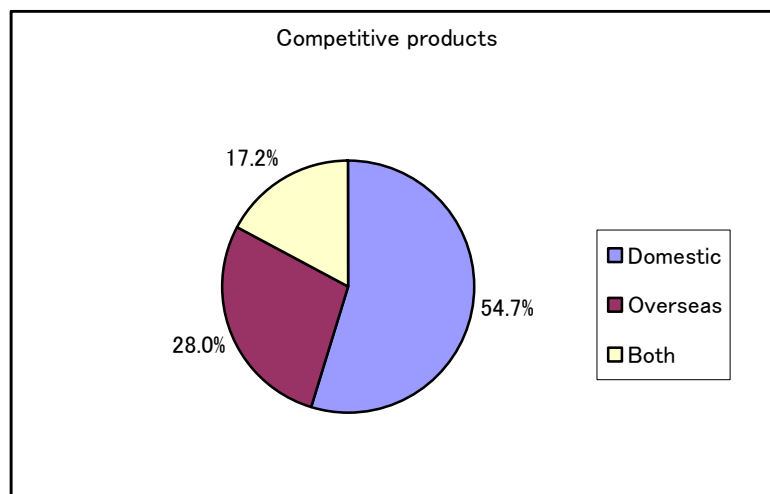


Source : JICA study team

Fig. 3.20 Major Issues

2) Competitive products

As major markets for the responding companies are domestic, 70% of respondents cited competition with local companies, slightly over 40% foreign companies, and less than 20% both. Sector-wise, a higher percentage of automotive parts manufacturers than other sectors reported competition from foreign countries, while food processing equipment parts manufacturers showed a higher percentage for competition with local companies and agricultural machinery parts manufacturers more or less the same as the average.



Source : JICA study team

Fig. 3.21 Competitive Products

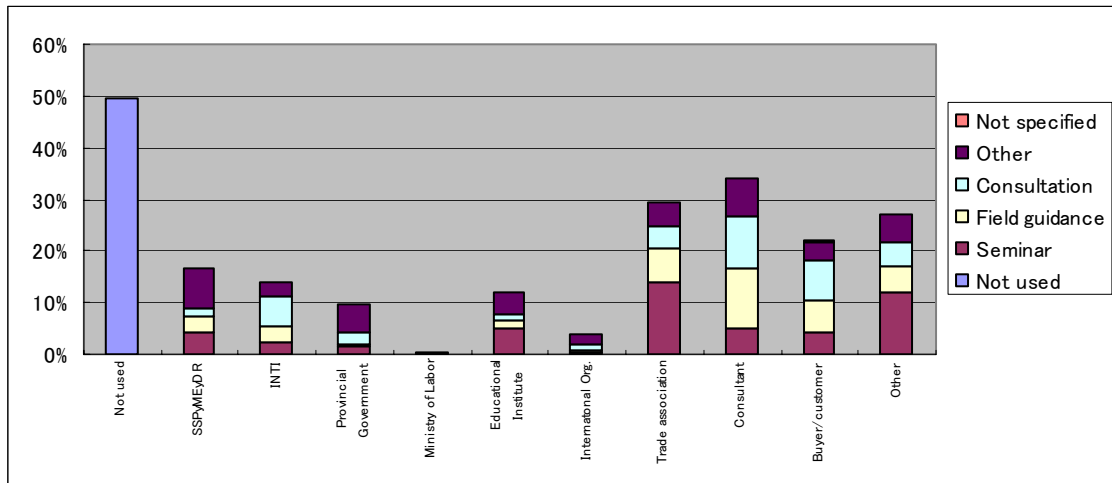
(3) External support

1) External support received

Approximately one half of the responding companies have not received external support. The largest source of external support was professional consultants (82), followed by trade associations (71) and buyers (customers) (53). Among companies that received external support, many received from two or more sources; 121 companies received 406 cases of support (3.4 cases on average). On the other hand, only 33 cases of INTI support were cited, accounting for only 8% of total support cases. Finally, support by the MOL was rarely used; only one case was reported.

As for the support method, there was no significant difference between seminar, field guidance, consultation, and others. In terms of field, ISO9000 accounted for 53 cases, production management 51 cases, and production technology 51 cases, not including others. Support relating to IT use counted only two cases.

Many respondents considered external support as “very useful” or “useful.” Of 352 cases of support in total, 64% were rated as useful. 6% were considered as “not very useful” or “waste of time.” Thus, external support was generally considered to be useful. In particular, professional consultants and trade associations were highly valued probably because they provided service that met the needs. No one rated support by SSPyMEyDR as “useless.” On the other hand, there were two responses to rate INTI service as “waste of time” while many responses viewed it as “useful,” making INTI somewhat unfavorable against SSPyMEyDR.

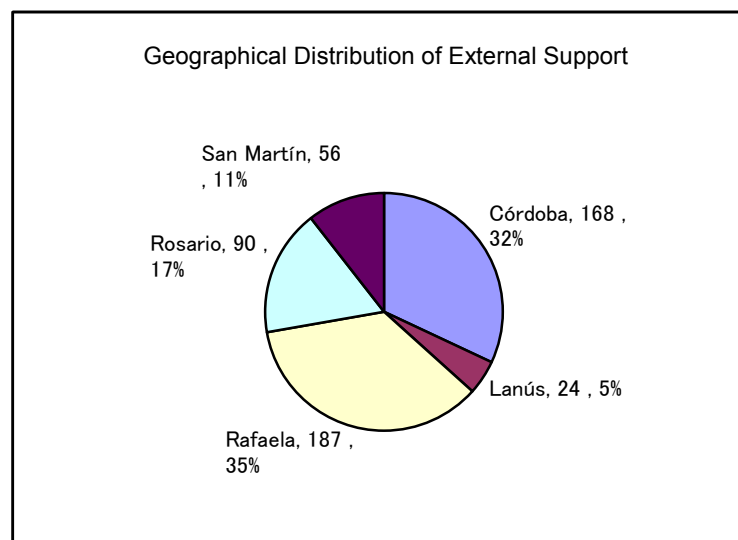


Source : JICA study team

Fig. 3.22 External Support by Source and Type

Note: The total number of companies that gave response – 240; each subtotal of the above percentage shares exceeds 100% because many companies received external support from more than two sources.

Geographically, a higher percentage of companies in Rafaela used external support more often than other cities, i.e., 3.3 times per company vs. 2.2 times on the overall average, suggesting active support in cooperation of various organizations, including municipality, trade association, INTI, and CDE.

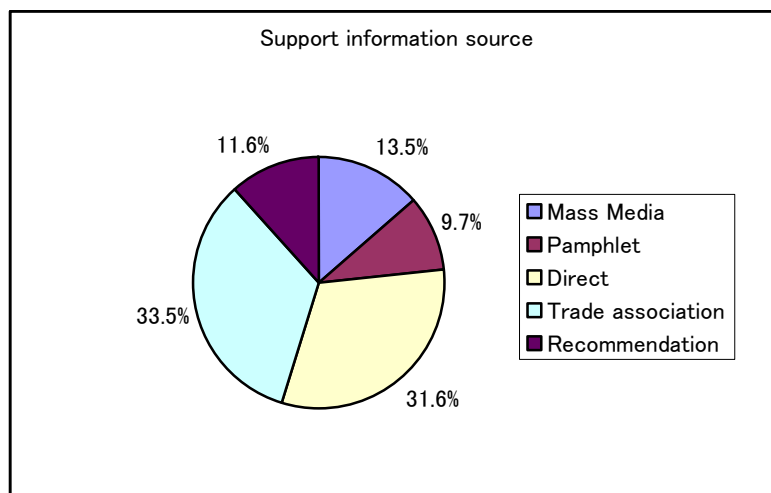


Source : JICA study team

Fig. 3.23 Geographical Distribution of External Support

2) Support information source

Many companies obtained support-related information from trade associations or through direct contact with sources. While automotive parts manufacturers relied more on trade associations, food processing equipment parts manufacturers direct contact. It should be noted, however, that the question did not ask about the type of support for which information was sought, multiple information was obtained from single source (or medium) and the percentage distribution here does not necessarily represent the actual level of concentration on specific information sources.



Source : JICA study team

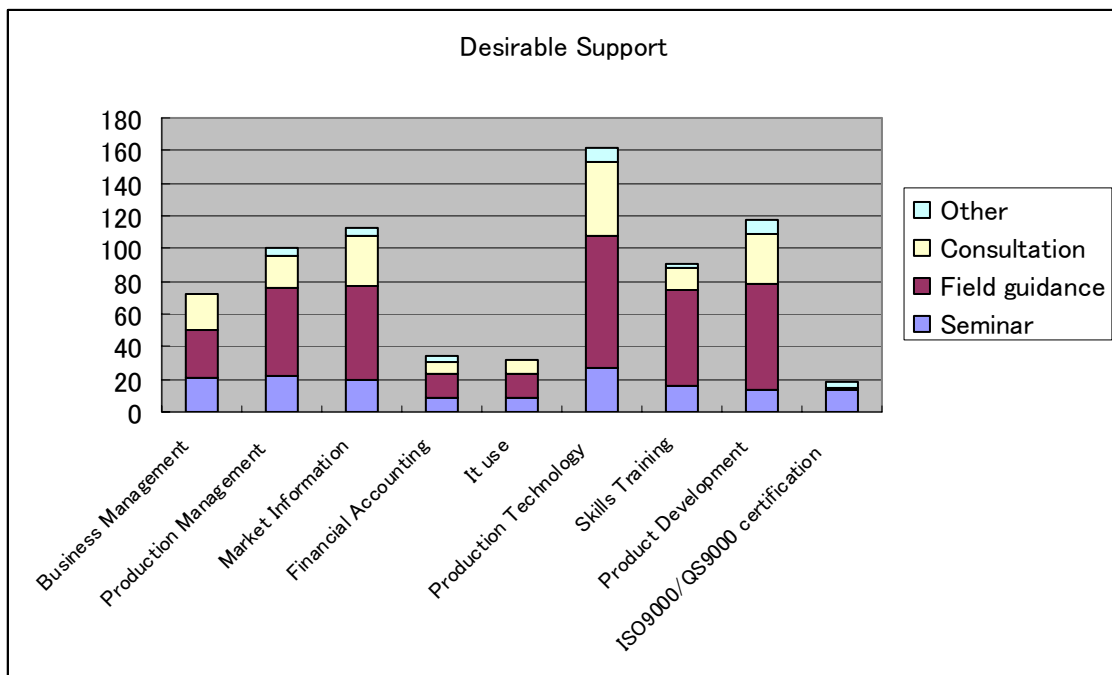
Fig. 3.24 Information Source

(4) Future intent to use external support organizations and consultants

92% of respondents answered “will use” or “will use under certain conditions.” On the other hand, reasons cited for not using external support in the future were “can be dealt with internally (11),” “little effect (4),” “disturbance with daily operation (4)” and “high cost (3).”

As for type of support desired by respondents, one half expected practical guidance in the plant. As for field of support, product technology was most popular, followed by product development technology, market information, and production management. The least popular field was ISO9000/QS9000, probably because most companies requiring the ISO certification already obtained it.

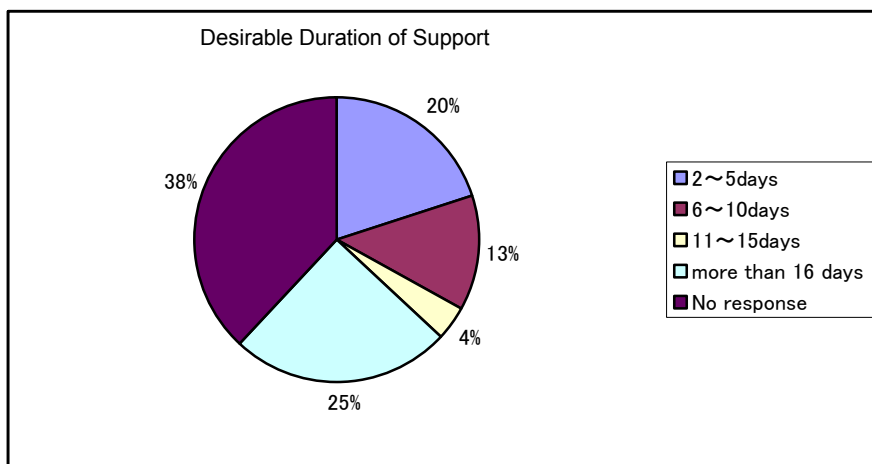
In the field of production management, the most desirable method was field guidance, more than twice the seminar and consultation.



Source : JICA study team

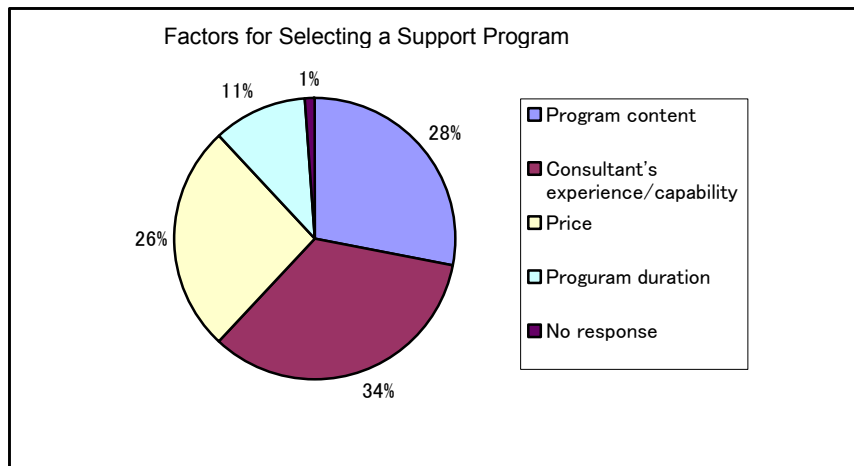
Fig. 3.25 Desirable Support

As an adequate duration of support, the highest percentage (59 companies) responded 15 days or longer, and 2- 5 days were cited by 49 companies. As for the most important factor for selecting organizations and consultants, the highest response was consultant's experience and capability, followed by program content and price. The result indicates that the program duration is least important among other factors.



Source : JICA study team

Fig. 3.26 Desirable Duration of Support

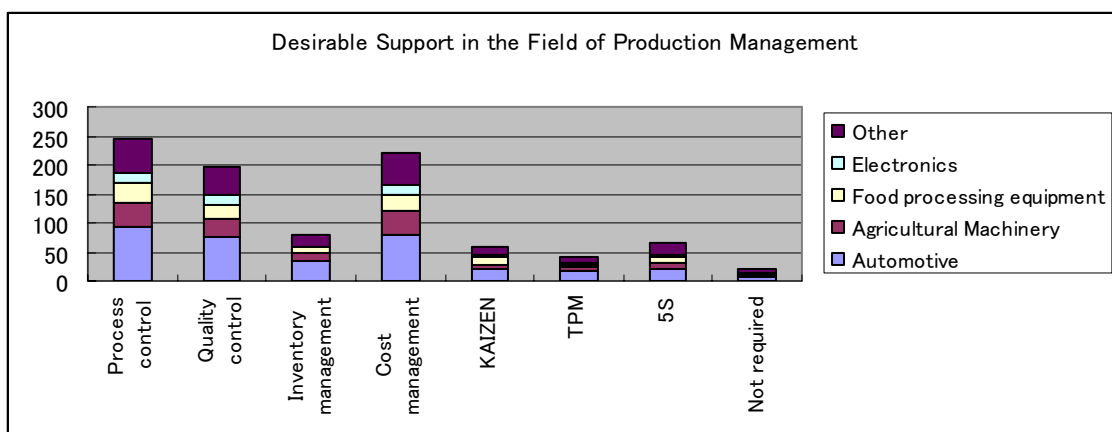


Source : JICA study team

Fig. 3.27 Factors for Selecting a Support Program

(5) Support in the field of production management

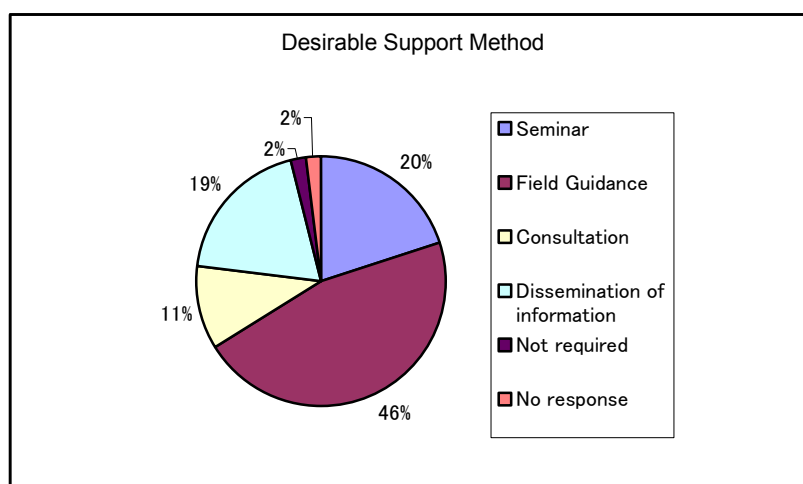
As for production management-related support, many respondents expressed interest in “process control,” “cost management” and “quality control,” which were more frequently cited than other areas. In contrast, there were much few requests for Japanese production management methods, such as 5S, Kaizen, and TPM. A major reason for the poor interest is the lack of knowledge and understanding of their existence and effect. The most requested support method was field guidance at factory, followed by seminar and dissemination of information.



Source : JICA study team

Fig. 3.28 Desirable Support in the Field of Production Management

There is little difference between sectors or cities, except for Rafaela where a higher percentage of respondents cited the need for Kaizen and 5S.



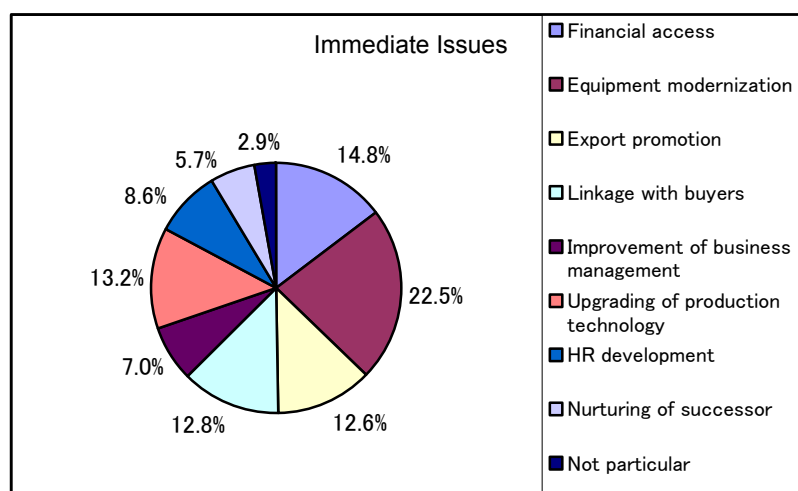
Source : JICA study team

Fig. 3.29 Desirable Support Method

(6) Other

1) Immediate issues

The immediate issue that was most frequently cited was equipment modernization (102 companies), followed by access to financial service (67), improvement of production technology (60), export promotion (60), and linkage with buyers (58). On the other hand, much less companies cited the nurturing of successors and the upgrading of business management techniques, or 26 and 32 companies, respectively.



Source : JICA study team

Fig. 3.30 Immediate Issues

2) International accounting standard governing financial statements

99 companies responded that they complied with internationally accepted accounting

standards, while 57 said no and 84 gave no response. A large number of companies giving no response seem to be attributed to the lack of understanding of international accounting standards applicable to financial statements.

3) Participation in model projects and corporate diagnosis

201 companies expressed willingness to participate in these projects.

4) Request for government

The most frequently cited request for the Argentine government is relating to tax, followed by loan and finance. On the other hand, technological development and market information were less cited.

3.2.3 Conclusion

In the questionnaire design stage, which more or less the same number of responses was expected from each city. The actual survey results turned out to be a large variation. This seems to come from quality of an old database storing company data. The database was compiled from the lists of trade association members and directories in various cities. The fact that the rate of response was higher in regional cities than the capital region seems to reflect the accuracy of data on companies in regional cities and close communication between companies and trade associations/INTI, facilitating cooperation from individual companies.

Given the large variation, it is not feasible to compare responses in Lanús and Córdoba directly. Data in Lanús, with a small number of responses, present a larger statistical error. On the other hand, a significant difference between sectors does not likely emerge because more companies in automotive, agricultural machinery and food processing equipment parts industries manufacture more than two product types.

Major characteristics of the responding companies are summarized as follows.

- Micro enterprises represent large portions and many companies report relatively small sales, especially the food processing equipment industry.
- Many companies were established after 1990.
- Essential technologies are mainly machining and assembly.
- The average annual sales are around 1.8 million pesos.
- Three out of four companies are engaged in OEM production.
- Most companies serve the domestic market, with a generally low export ratio.
- Many companies believe that a major source of competitiveness is price, delivery

schedule or R&D, while a small number of companies cite quality.

- Nearly one half of respondents have not received external support.
- The major source of external support is professional consultants, followed by trade associations and buyers (customers). Generally, companies that have received external support consider it to be useful.
- Most companies desire to use external support, while a small percentage of them do not intend to use it, largely because they believe they can take care of themselves.
- Production management fields for which support is expected strongly are “process control,” “cost management” and “quality control.”
- Immediate issues that are frequently cited are equipment modernization, financial access, improvement of production technology, export promotion, and linkage with buyers.
- 99 out of 240 companies comply with internationally accepted accounting standards.
- 201 companies want to participate in the model project.
- The major request for government is concerned with tax.

The questionnaire survey revealed that many companies expected to receive future support while many did not receive such support, and reasons can be explained as follows.

- Lack of efforts to communicate support information
- Lack of timeliness of support that was not available when wanted
- Poor market conditions that prevented companies from seeking support
- High service prices that were not affordable for most companies

At present, the market is recovering and many manufacturers appear to boost production, partly explaining the reason why many respondents cited equipment modernization as the most important issue in the questionnaire survey, and suggesting the rise in the need for improvement of productivity and production management. Meeting these diverse needs, therefore, would promote use of support and increase its contribution to industry and its growth.

3.3 Simplified Corporate Diagnosis for SMEs

Simplified corporate diagnosis for SMEs, which primary purpose was to select areas and companies for the model project – the major component of the present study, was carried out as part of the preliminary survey between November and December 2004.

INTI, which was prepared for implementation of soft technology support for small- and medium-sized manufacturers, took this simplified SME diagnosis as a good opportunity for the first technology transfer from the study team to the counterpart and was actively participated in the project by selecting companies for the simplified diagnosis and by sending its staff to each visit.

The simplified corporate diagnosis for SMEs was conducted for the following three objectives.

- To understand the current state of SMEs and use it for formulation of the model project, while selecting candidate companies for the project.
- To carry out technology transfer to INTI staff as the counterpart.
- To provide the simplified guidance and advice by the study team members for companies that receives the simplified diagnosis.



3.3.1 Outline of the Simplified Corporate Diagnosis and Methodology

(1) Candidate project areas and final selection

As candidate areas for the model project, five cities in three provinces (Buenos Aires, Santa Fe, and Córdoba) were selected by the counterpart, namely San Martín, Lanús, Rosario, Rafaela, and Córdoba. Then, the preliminary survey was conducted for the five cities and the study team visited, together with the counterpart staff, public and private SME support organizations in the cities. Lanús was dropped from the final list as there was no organization responsible for implementation of the model project and the municipal government did not show interest in project participation.

As a result, simplified corporate diagnosis was conducted for SMEs in four cities, San Martín (Buenos Aires), Rosario (Santa Fe), Rafaela (Santa Fe), and Córdoba (Córdoba).

(2) Presenting meeting on the corporate evaluation method

Prior to the start of the simplified diagnosis, a seminar on the corporate evaluation method was conducted for the counterpart staff, upon the request of INTI. It was attended by approximately fifteen INTI staff including local center staff, who would be in charge of future support relating to soft technology and actually participated in the simplified corporate diagnosis.

(3) Corporate evaluation method

- Diagnostic items were designed to cover five areas relating to general business management, namely “management,” “production,” “market and sales,” “human resources” and “finance.” In particular, “production” that was the major subject of the present study was composed of the following eight sub-items. Tables 3.4 and 3.5 summarize standard evaluation checkpoints for each diagnostic item, based on which evaluation was made on a five-grade scale. The average score for the eight sub-items in the production category is presented as evaluation on the company’s production capability, and the average score for the five areas including production is the overall evaluation score.

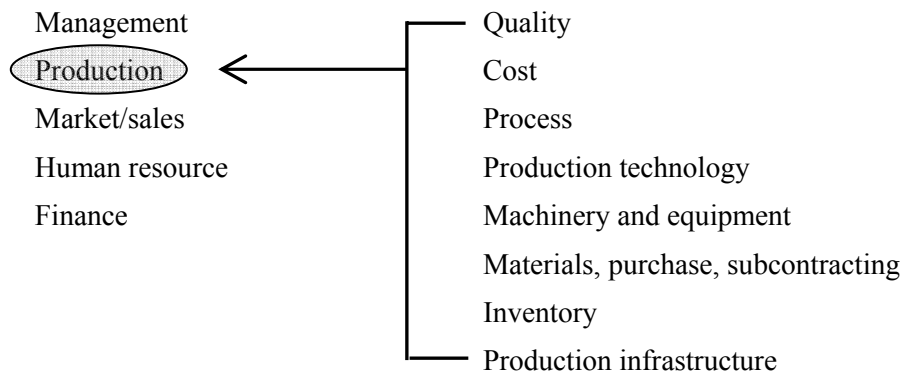


Table 3.4 Evaluation Point Sheet for Overall Radar Chart Analysis

1 Management	
1	Do you have the company vision and management policy and communicate them to employees for their understanding?
2	Do you have the company's basic strategy and objective?
3	Do you have a management plan in place?
4	Is the management plan feasible and does it include risk management measures?
5	Does the present organization and its management is based on specific principles?
6	Do you understand the industry trend and realize your positioning in the industry?
7	Is responsibility of each division clearly defined, with adequate delegation of power and authority?
8	Is your successor named and trained properly?
9	Is your company involved in activities to gain social confidence, including corporate ethics, environmental protection, and social contribution?
10	Do you collect, analyze and use information required for management?
2 Production	
See the radar chart for production.	
3 Market and sales	
1	Do you have a system and organization to obtain information on market and competitors?
2	Do you have your own sales plan and policy?
3	Do you set sales prices appropriately?
4	Do you perform SWOT analysis on your company?
5	Do you assort and use information on customers that are served by your product or service?
6	Is your sales system based on customer satisfaction?
7	Does your sales promotion activity adopt an appropriate method and content?
8	Do you listen to customers and their complaints, opinions and satisfaction/dissatisfaction and respond to them quickly and effectively?
9	Do you work with reduction of distribution costs?
10	Do you provide the market and customers with information on your company, products and services?
4 HR management	
1	Is your HR management policy based on "employee satisfaction?"
2	Do you have a system to evaluate employees' capability and develop their skills and capacity?
3	Do you have a system to measure employees' performance and assign them to optimal positions?
4	Do you have an employee suggestion system? If so, do you receive many suggestions?
5	Do you have an appropriate method and standard for recruitment?
6	Do you have shop regulations and payroll rules in compliance with applicable law?
7	Do you have adequate safety management in place?
8	Do your employees know about employees' evaluation system and work regulations?
9	Are periodical business meetings held between employees and between employees and managers?
10	Do you understand what your employees are satisfied and dissatisfied about your company?

5 Finance	
1	Do your accounting and bookkeeping systems accord with your management organization, size and business characteristics?
2	Are your financial statements made according to applicable accounting principles, laws and regulations?
3	Do you have more than two financial sources and are you capable of raising funds whenever required?
4	Do you formulate short- and long-term working fund plans on the basis of cash flow?
5	Do you control your budget by comparing the budget and actual spending and taking adequate measures in the case of variation?
6	Do you know the cost and breakeven point for each product?
7	Do you have internal standards for cost accounting and its method?
8	Do you analyze standard and actual costs and use the results for cost reduction?
9	Do you have long-term capital investment plans?
10	Do you perform a feasibility study for a new capital investment project?

Source: JICA study team

Table 3.5 Evaluation Point Sheet for Production Radar Chart Analysis

1 Quality	
1	Do you build and maintain a companywide quality control system?
2	Do you always understand customers' quality requirements?
3	Are quality specifications for your products documented?
4	Do you record returns or complaints from customers and implement corrective measures to prevent recurrence?
5	Do you have official quality certification?
6	Does your product have competitiveness in terms of quality?
7	Do you organize and maintain quality improvement activities on the shop floor?
8	Do you record defects that occur in various stages of the production process?
9	Do you implement an inspection method suitable for quality specifications?
10	Do you pay attention to quality in the entire process, starting with purchase of raw materials?
2 Cost	
1	Do you build and maintain a companywide cost management system?
2	Do you control direct costs for each product?
3	Are our products cost competitive?
4	Do you understand raw data for cost accounting accurately?
5	Do you control inventory costs?
6	Do you control fixed production and indirect costs?
7	Do you organize and maintain cost reduction activities on the shop floor?
8	Do you allocate fixed production costs to each production line and product?
9	Do you use a cost management system to make a decision on cost reduction?
10	Do you understand key factors contributing to cost reduction?
3 Process	
1	Do you have and maintain a process control system?
2	Does your process control system ensure the production function and realize customer satisfaction?
3	Do you prepare and upgrade flow charts for process work and materials?
4	Do you maintain a streamlined flow of materials and parts between each production process and warehouse?
5	Is an appropriate communication method established between process control personnel and sales personnel?
6	Do you perform appropriate quality control in process?
7	Do you record production data and information and use them for daily improvement?
8	Do you monitor and control equipment's operating hours and surplus capacity?
9	Is standard operation time established?
10	Are standard man-hours established?
4 Production technology	
1	Do you have and maintain a technology management system?
2	Do you make efforts to improve production technology in all aspects, including the method, equipment, work,

	and conditions?
3	Do you have information on new equipment and process that can be applied to your company?
4	Do you collect information on equipment and processing methods used by competitors?
5	Do you make weekly and monthly sales and production plans and control delivery schedule accordingly?
6	Is your production technology, in terms of competitiveness, at local, regional, national or international level?
7	Is your production technology competitive?
8	Do you have proprietary technology?
9	Do you have patent and other intellectual property rights?
10	Is your production process automated effectively?
5 Machinery and equipment	
1	Is a person in charge of day-to-day management of machinery and equipment appointed? Is a management record maintained?
2	Is a person in charge of maintenance of machinery and equipment appointed?
3	Is a maintenance record for machinery and equipment kept?
4	Is maintenance policy established for machinery and equipment?
5	Are replacement parts provided adequately?
6	Do you make innovative efforts in the areas of modification and maintenance?
7	Do you obtain and store information on new technology relating to machinery and equipment?
8	Do you have formal procedures for equipment purchase?
9	Do you make equipment plans based on long-term management strategy?
10	Are circle activities relating to machinery and equipment, such as TPM activity, conducted?
6 Materials, purchase, and subcontracting	
1	Are raw materials readily available?
2	Do you obtain and compare quotations from different suppliers prior to purchase?
3	Do you inspect raw materials before acceptance?
4	Do you monitor the status of your suppliers and provide guidance as required?
5	Is a supplier delivery schedule clearly indicated?
6	Do you have a system to deal with a sudden change in delivery schedule or condition?
7	Are quality specifications for raw materials documented?
8	Do you check quality, delivery and price in the stage of selecting suppliers?
9	Is your turnover rate at the industry average level?
10	Do you have and maintain a management system for materials, purchase and subcontracting?
7 Inventory	
1	Do you have an inventory management system?
2	Do you provide separate warehouses/storage places for raw materials, work-in-process, and finished goods?
3	Do you perform inventory taking by checking actual products?
4	Is your warehouse assorted and tidied up properly?
5	Do you have formal rules for disposal of defective items?
6	Are locations and methods for storing items established and complied with?
7	Are storing locations and stored quantities indicated properly?
8	Are receiving and requisition forms made and used?
9	Are warehouses/storage places arranged in appropriate locations?
10	Is a person in charge of inventory designated?
8 Production infrastructure	
1	Is any standard for factory operation established and complied with?
2	Do you maintain good relationships with local residents?
3	Do you regularly collect external information affecting your company, such as environmental regulation?
4	Do you conduct employee satisfaction surveys on a daily basis?
5	Do you have and maintain applicable permits?
6	Are your employees well motivated?
7	Do you have necessary services and infrastructure in proximity to your company?
8	Is effective communication maintained between the production management and other departments?
9	Is your information system used effectively?
10	Do you comply with applicable laws and regulations?

Source: JICA study team

The five-grade scale evaluation criteria was based on the average level of parts manufacturers serving the global OEM markets, which was set at 5, while the cottage level industry using obsolete equipment and technology at 1. Table 3.6 shows a general guideline for the five-grade scale evaluation.

Table 3.6 Five-Grade Evaluation Standard

Grade	Rating in terms of international competitiveness	Overall evaluation	Production technology/ Machinery and equipment/ Process evaluation
5	Average level as OEM parts manufacturer serving the global market	Excellent in terms of documentation, activities, deliverables, and results	Appropriate equipment and technology to meet quality requirements for global market-bound products
4	↑ ↓	Sufficient levels of documentation, activities, deliverables and results, but still some rooms for improvement	Generally, appropriate equipment and technology is used but improvement is required in some areas.
3		Sufficient documentation, partial activities, while deliverables and results are not confirmed.	Inappropriate equipment and technology represents fairly large portions, and some are missing.
2		No systematic documentation or activity, requiring improvement, while no deliverable or result is recognized	Equipment and technology is generally inappropriate, constituting a major factor for poor product quality.
1	Lowest level as parts manufacturer	Absence of documentation, activity, deliverable or result	Obsolete equipment and technology, which is no longer used for factory operation, is still used and is rated as cottage industry.

Source: JICA Study Team

Evaluation results were compiled into a corporate diagnosis chart using a uniform format. The corporate diagnosis chart contained two radar charts that showed the overall evaluation on each company including “production” and a specific evaluation on the eight sub-items in the production category. Furthermore, it included comments by the evaluation team, including kaizen proposals, overall evaluation, a guidance record summarizing guidance and advice provided for the company in the course of the diagnosis program, and the intent of the company to participate in the model project.

(4) Selection of companies

Companies that would receive the simplified corporate diagnosis were selected from small- and medium-sized parts manufacturers for automobiles, agricultural machinery and/or food processing equipment. In San Martín, the Bureau of Industry under the municipal government

led the selection process, and companies recommended by INTI and Automotive Parts Association (AFAC) and those that expressed the desire to receive the diagnosis were added. In Rosario and Rafaela, INTI regional centers made selection. In Córdoba, the list of candidate companies was prepared under the leadership of the local metal and parts industry association. The number of companies that received the simplified diagnosis in each city is shown below.

San Martín (Buenos Aires)	16 companies
Rosario (Santa Fe)	9
Rafaela (Santa Fe)	5
Córdoba (Córdoba)	11
Total	41

(5) General profiles of companies that received the simplified diagnosis

a. Sector

Table 3.7 Classification by Sector

Sector	No. of companies
Automotive parts	30
Agriculture machinery parts	13
Food-processing equipment parts	2
Other	3
Total	48

Note: Of total, seven companies supply both automotive and agricultural machinery parts.

Source : JICA Study Team

b. No. of employees

Table 3.8 Classification by No. of Employees

Number of employees	No. of companies
less than 10	2
10 - 99	31
100 or over	7
Total	40

Note: Employment data are not available from one company

Source : JICA Study Team

(6) Actual visit

The study team members formed two or three groups and visited one company per day. Prior

to each visit, the evaluation team sent to the company a simple questionnaire asking its general profiles.

Corporate diagnosis was conducted as follows.

- a. Interview with management (confirmation on the company's profiles and hearing of problems recognized by the company)
- b. Factory tour under the guide of the owner and/or the factory manager
- c. Interview with management (detailed interview by the evaluator, questions and answers, and consultation)

3.3.2 Results of Corporate Diagnosis

The corporate diagnosis charts covering 41 companies for which the simplified corporate diagnosis was performed were compiled by the study team and were then submitted to INTI. The diagnosis charts on six (6) companies are presented in the following pages. Note that the corporate diagnosis chart used for this simplified SME diagnosis is expected to form the basis of INTI's future corporate diagnosis service.

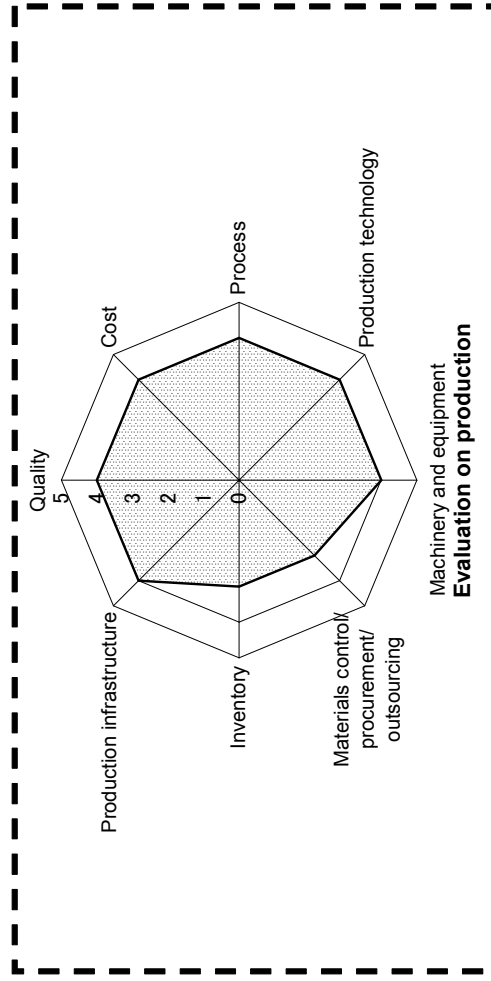
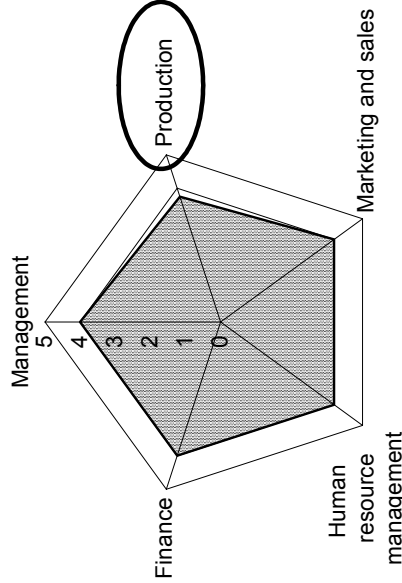
Company Code	1/5
SM-7	

Table 3.9 Participating Company 1 of Model Project 1 Corporate Diagnosis Chart

Date of diagnosis:	November 15, 2004
Company name:	ANICETO GOMEZ S.A Marcelo Gómez (Vicepresidente)
Team member:	Higo, Hata, Kato, Moriguchi / INTI: Iván
Evaluator:	Teruo Higo

Evaluation Results	
Overall	
Management	4
Production	3.8
Marketing and sales	4
Human resource management	4
Finance	4

Quality	4
Cost	4
Process	4
Production technology	4
Machinery and equipment	4
Materials control/ procurement/ outsourcing	3
Inventory	3
Production infrastructure	4



Company Code	2/5
SM-7	

Table 3.9 Participating Company 1 of Model Project 1 Corporate Diagnosis Chart

1. Evaluation Results
1.1. Overall

Item	Degree of importance (up to two)	Comment	Recommendations for Kaizen
Management	O	<p>1. The company was founded by the father of the president in 1947. It is now operated by the founder's son (president) and his sister (director). It has been maintaining its sound and reliable management style. The president is relatively young (44 years old) and needs to build up management experience. And he is willing to learn.</p> <p>2. It is basically operated by its own funds. At present, it plans to build an additional production facility in an adjacent lot (1,000m²). It is also installing new machinery made in Germany.</p> <p>3. The management policy clearly focuses on "reorganization." In general, the company understands its strengths and weaknesses well and maintains sound management accordingly.</p> <p>4. Hygienic control and labor management are excellent.</p>	To shift from family operation to modern management; to formulate and document medium- and long-term plans; to learn modern management techniques (president), e.g., at the seminar to be held under the model project; to promote "productivity improvement" and "elimination of waste" by the reorganization team.
Production	O		
Marketing and sales		At present, the company holds 75-80% of the domestic market. Exports account for 40% on a volume basis and 35% on a value basis, and destinations include the U.S., Mexico, Canada, Egypt, Algeria, and Turkey. It has obtained ISO9001 certification and received audit on a continuous basis, which makes it advantageous in the export market. A full-time manager in charge of export is appointed. The company intends to expand into niche markets. It is very active and forward-looking.	To start up the Mexico branch as early as possible; to participate in foreign trade fairs and exhibitions actively; and to increase production and sales by starting commercial operation of the CNC machine as early as possible.
Human resource management		The company has 50 employees (of which 37 are directly engaged in production) and consists of export, development, quality and other departments. The organization is well designed and operated. For development of a new machine, a son of the partner/director (the president's sister) (student) comes to the factory three times per week.	To carry out employee education and training, both in-house and outside, including participation in the seminars to be held under the model project.

Company Code	3/5
SM-7	

Table 3.9 Participating Company 1 of Model Project 1 Corporate Diagnosis Chart

Finance	Since its foundation in 1957, the company has been operated by the founder and its children (son as president and daughter as director in charge of accounting) in a very sound management style, with care not to mix up official and private matters. While Accounting is managed by an outside accounting firm. While budgeting and product-based cost accounting have not been implemented, the president and the management strongly realize the need for shift from their traditional management style based on intuition and experience and plan to establish a modern management system. What the company needs to do is the introduction of formal cost accounting and budget systems, together with an organization and system for proper foreign exchange management and collection in response to an anticipated increase in export.	To introduce the "management accounting system" as early as possible to take advantage of the favorable business condition as present, in order to develop the ability to understand the operating status in quantitative terms quickly and accurately, thereby to ensure management under the plan-do-check cycle.
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1.2 Production

Item	Degree of importance (up to two)	Comment	Recommendations for Kaizen
Quality		QC education and training seems to be carried out regularly, as judged from a poster and a slogan for QC circle activity that are posted on the wall. Unlike precision equipment, the company's products do not have critical points excepting strength. The inspection process is incorporated into the production line where products of standard quality are churned out.	To continue QC policy and education (including 5S), with follow-up.
Cost		Cost-related charts are produced monthly.	To introduce the cost accounting and budget system; to shift from the traditional management style relying on intuition and experience to modern management; and to introduce break-even point analysis.
Process		The factory basically practices 5S well, except for some disorders (various articles are left on the pathway) due to a tight production schedule. Because of a relatively small number of process steps, no major bottleneck was observed.	To reorganize the layout after a new production line has started up; and to introduce a PC-based production management system as early as possible, which is currently under trial operation.
Production technology		A technical consultant is hired for support and seems to function well. The production team is capable of manufacturing a machine on their own.	To expand extent of automation.
Machinery and equipment		Process steps between machines are mostly automated. The automation was done by employees.	To automate the rest of process steps that has still to be automated.

Company Code	4/5
SM-7	

Table 3.9 Participating Company 1 of Model Project 1 Corporate Diagnosis Chart

Materials control/ procurement/ outsourcing	○	Spring steel is locally purchased. The present consumption rate is 140 tons per month.	To prevent inclusion of different materials by proper control.
Inventory	○	There is a sizable dead stock (140 tons, equivalent to around one month inventory), as a result of inadequate make-to-stock production. It takes up otherwise a usable space.	To check possibility of disposal, reuse or sales; and to improve accuracy of forecast for make-to-stock production (effective use of database and in-depth analysis).
Production infrastructure		The company's production capability is highly competitive. Profits are generated at around 80% in operating rate.	To make medium- and long-term production plans known to factory workers and to establish a production system that implements the plans.

2. Current state of IT use

1. *Does your company operate your own Web site for promotion of your products?*
We operate our Web site for promotion and advertisement on our products (operating two home pages).
2. *Do you use the Internet to find trade partners? If so, which network do you use? Who is hosting the network?*
We use the Internet to find trade partners.
3. *Do you use e-commerce for placing or receiving a purchase order to or from your trade partners?*
No e-commerce is used for purchase order or order receiving.
4. *Do you use any ICT-applied system tool for accounting, sales management, and production management purposes?*
We are considering use of an ICT-applied system tool for accounting, sales management, and production management.
5. *What type of ICT technology system tool do you use for product design, production, and technological development applications?*
No ICT technology system tool is used for product design, production, and technology development purposes.

Company Code	5/5
SM-7	

Table 3.9 Participating Company 1 of Model Project 1 Corporate Diagnosis Chart

3. Overall evaluation

Generally, a company having confidence in itself tends to give an approval for being photographed. The company was no exception and approved it immediately. It recognizes itself very well, i.e., the current status as a small spare parts manufacturer and the goal of achieving quality levels of suppliers serving large assembly manufacturers. Also, it maintains sound management without seeking immediate profits, presumably following the founder and father's philosophy. The president has engineering background and has clear potential to become a great manager if he leans modern management techniques. The company's healthy state is clearly seen in its meeting room that is decorated with good taste, including high-grade coffee cups and well-mannered employees who received the team. Office employees and factory workers are cheerful, suggesting good labor-management relations. The factory has a comfortable atmosphere to indicate the good working environment. It seems to be worth supporting the young president (44 years old) in areas of both production and management and the company is a good candidate for the model project.

4. Guidance record

1. To shift from family operation to modern management; to encourage the president to participate in management seminars (including the one to be held under the model project); to promote "productivity improvement" and "elimination of waste" by the "reorganization team." Examples at SIPAR and Rosario were introduced.
2. To introduce the cost accounting and budget system; and to shift from the traditional management style based on intuition and experience to systematized modern management.
3. To actively participate in foreign trade fairs and exhibitions; and to explore niche markets by taking advantage of such opportunities.
4. To upgrade maintenance of machinery and equipment.
5. To modify the layout for the purpose of minimizing a lead time from materials feeding to completion, e.g., reduction of workers to a watchman and a maintenance worker

5. Interest in participation in the model project

<input checked="" type="checkbox"/> Interested	Conditions, key points, etc.
<input type="checkbox"/> Not interested	

Company Code	1/5
RO-6	

Table 3.10 Participating Company 2 of Model Project 1 Corporate Diagnosis Chart

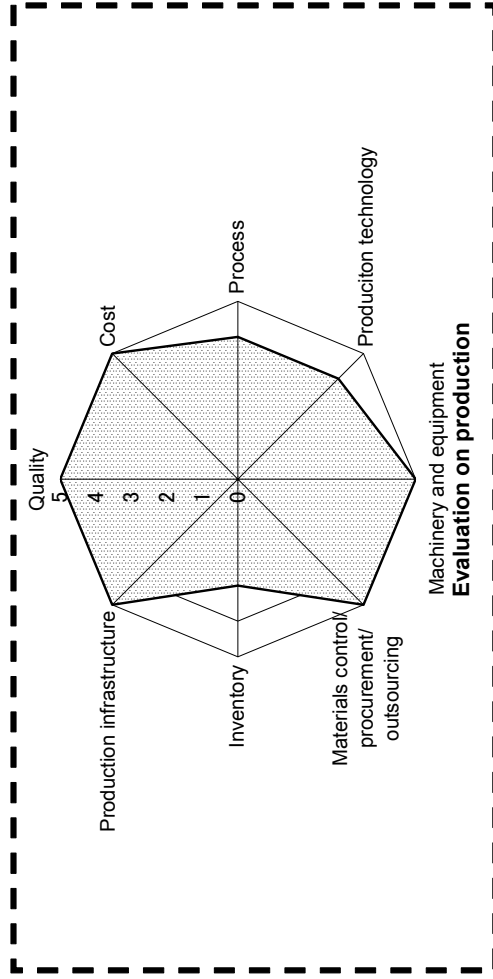
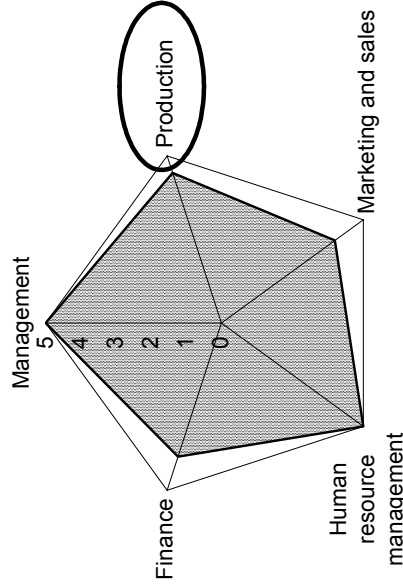
Date of diagnosis:	November 23, 2004
Company name:	KRETZ
Team members:	Hata, Higo / INTI : Gabriel Akira Hata
Evaluator:	

Evaluation Results

Overall

Management	5
Production	4.5
Marketing and sales	4
Human resource management	5
Finance	4

Quality	5
Cost	5
Process	4
Production technology	4
Machinery and equipment	5
Materials control/procurement/outsourcing	5
Inventory	3
Production infrastructure	5



Company Code	2/5
RO-6	

Table 3.10 Participating Company 2 of Model Project 1 Corporate Diagnosis Chart

1. Evaluation Results

1.1. Overall

Item	Degree of importance (up to two)	Comment	Recommendations for Kaizen
Management	○	The company is specialized in manufacture of electronic scales. It was founded in 1963 by the father of the president. The second-generation president (40 years old) and his wife (39 years old) are changing the company with a new business sense. The "KRETZ" brand accounts for 98% of the company's product line. Market breakdown is 94% domestic and 6% export. Electronic scales represent 40% the domestic scale market. In South America, there are only three electronic scale manufacturers, two in Brazil and one (the company) in Argentina. The company nearly monopolizes the domestic market. Its products are mostly sold to supermarkets.	The company should not be content with the present success and needs to develop a new-generation product, such as multifunctional personal scales (capable of measuring weight and body percentage simultaneously). The lead time, currently 1.5 years, should be reduced.
Production	○		
Marketing and sales		The company displays products at exhibitions. The factory has a show room to promote all types of products to visitors. At present, the company primarily serves the domestic market, but it tends to focus on export. Target markets are Uruguay, Bolivia, Paraguay, Peru, Venezuela, Chile, and Ecuador.	At present, the export ratio is 6% and a target should be set at 10%. At the same time, the domestic share should be raised from 40% to 50%. To do so, sales areas should be expanded gradually so as to maintain good after-sales service in the course of expansion.
Human resource management		<ol style="list-style-type: none"> The company has 60 employees (average age of 30 years old). The development division has five engineers. 30% of employees are college graduates and 60% engineers. Two full-time staff members are responsible for employee education and training. Education and training plans are made for individual employees annually, followed by evaluation. The company spends a total of 3,000 hours for in-house education and training (equivalent to 8.5% of operating hours). Instructors also come from outside. The company also provides elaborate health care for employees, and the doctor comes twice per week. 	<ol style="list-style-type: none"> Accurate estimation and control of the annual education budget It is desirable to offer courses that help self-development of employees, in addition to work-oriented courses.

Company Code	3/5
RO-6	

Table 3.10 Participating Company 2 of Model Project 1 Corporate Diagnosis Chart

Finance	Specific financial data were not heard, but high levels of the operation and management system suggest high profitability. The company has recently built and moved to a new building. It acquired the site by its own funds.	<ol style="list-style-type: none"> 1 Cost data should be produced for each model. 2. The budget and actual results should be compared and analyzed on a monthly basis.
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1.2 Production

Item	Degree of importance (up to two)	Comment	Recommendations for Kaizen
Quality		<ol style="list-style-type: none"> 1 The company has obtained ISO9001 and 14000 certification. 2 Parts delivered by outside suppliers are properly checked in the acceptance inspection process. The rejection rate is less than 1%. 3 The company conforms to IRAM specifications. 4 Quality-related education is also conducted. 	<ol style="list-style-type: none"> 1 To maintain the organization and system required by ISO; and to incorporate design that gives consideration to reliability improvement. 2 At the life test stage, severe tests (temperature, humidity, shock, water injection, etc.) should be conducted.
Cost		Presumably, the company maintains high profitability, although it pointed out cost reduction as a major issue.	While efforts are needed to reduce labor cost, materials costs such as outsourcing and purchase represent a significantly high percentage. They should be reduced by applying a value engineering approach.
Process		<ol style="list-style-type: none"> 1. In the in-house production process, the body of the scales is assembled, although most parts are outsourced. 2. Assembly, adjustment, and life test (consecutive 48 hours) are conducted. 	The process layout for production increase should be considered.
Production technology	○	The circuit board is a critical element of the product. It is supplied by a manufacturer that conducts in-house inspection, but the company maintains technical capability to conduct its own inspection and adjustment. In the past, a product was found to be defective in the circuit board after delivery and the company suffered substantial loss.	Soldering is essential in assembling the circuit board. Workers engaged in assembly should improve their soldering technique.
Machinery and equipment		The factory site is 52,800m ² with the building having a floor area of 3,800m ² . The production process consists of manual assembly work, and machinery is limited to several sheet metal working and welding machines.	Stainless steel plates can be cut by laser, and the possibility of using a laser cutting machine should be considered.
Materials control/ procurement/ outsourcing		Purchased/outsourced products seem to account for a high percentage. In particular, critical parts such as the circuit board are imported from Japan or Taiwan.	Cost reduction measures should be devised through meeting between the company's personnel in charge of design, purchase and outsourcing, and suppliers. (A value engineering approach will be useful.)

Company Code	4/5
RO-6	

Table 3.10 Participating Company 2 of Model Project 1 Corporate Diagnosis Chart

Inventory		<p>1. The company holds two-month inventory. The warehouse occupies a rather large space.</p> <p>2. Finished products (kept in a box) are stacked rather high.</p>	<p>Circuit boards are put separately in an ordinary box for transportation from the warehouse to the assembly line. A special container box should be used.</p>
Production infrastructure	○	<p>1. Research and development is the company's lifeblood. Five staff members are engaged in R&D. The average lead time from product development to commercialization is 1.5 years.</p> <p>2. To ensure accuracy of the scales, calibration of weights is important and is contracted to INTI.</p>	<p>1. Efforts should be made to identify the market needs.</p> <p>2. To reduce the lead time, broad use of computer technology, standardization of parts and other measures should be taken.</p> <p>3. The cell production system should be considered.</p>

2. Current state of IT use

<p>1. <i>Does your company operate your own Web site for promotion of your products?</i> Yes, we do.</p> <p>2. <i>Do you use the Internet to find trade partners? If so, which network do you use? Who is hosting the network?</i> We are eager to procure parts from foreign sources, but response to our inquiry is generally very slow. A Japanese manufacturer made poor response</p> <p>3. <i>Do you use e-commerce for placing or receiving a purchase order to or from your trade partners?</i></p> <p>4. <i>Do you use any ICT-applied system tool for accounting, sales management, and production management purposes?</i></p> <p>5. <i>What type of ICT technology system tool do you use for product design, production, and technological development applications?</i> The computer system is used for tasks that are usually handled by computer.</p>
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Company Code	5/5
RO-6	

Table 3.10 Participating Company 2 of Model Project 1 Corporate Diagnosis Chart

3. Overall evaluation

1. The factory, which was previously accommodated in five facilities in the city, was integrated by moving to a new facility in February 2004. The building is modern and well designed (including the factory).
2. The company needs to shift from the traditional family operation to modern management based on organizational efforts. Labor-management relations seem to be good.
3. It is respectable that the company survived through the economic crisis in the country without laying off any employee.
4. The company is an R&D type company and should focus on product development (health care-related).
5. The company is specialized in production and sales of electronics equipment for food superstores, and it does not belong to automotive, agricultural machinery, and food processing machinery sectors that are subject to the study under this project.

4. Guidance record

1. For the production management system, computer technology should be introduced to maximize its effectiveness.
2. The management and general employees should get together to discuss as to the "course to be followed by our company in the future."
3. Based on the results of the above discussion, medium- and long-term management plans should be established and implemented at every level, including day-to-day operation.
4. Efforts should focus on human resource development in order to capitalize on the young work force (average age of 30s).
5. The management (president and directors) should identify possible risks and conceive ways to cope with or mitigate them, such as emergence of strong competitors in and outside the country (design, function, price, etc.) and a sudden increase in employee turnover.
6. Effective kaizen and reform would cause production to reach the level three times the present capacity (2,000 units per month).

5. Interest in participation in the model project

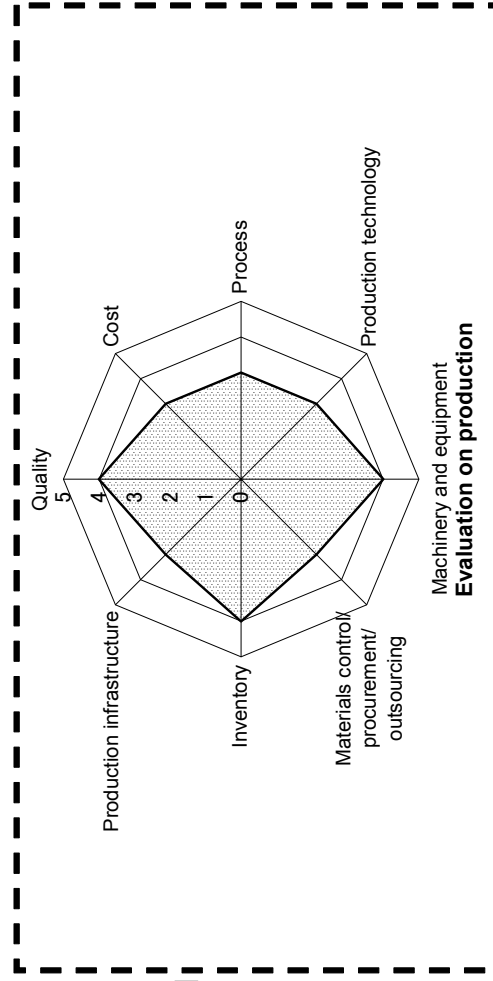
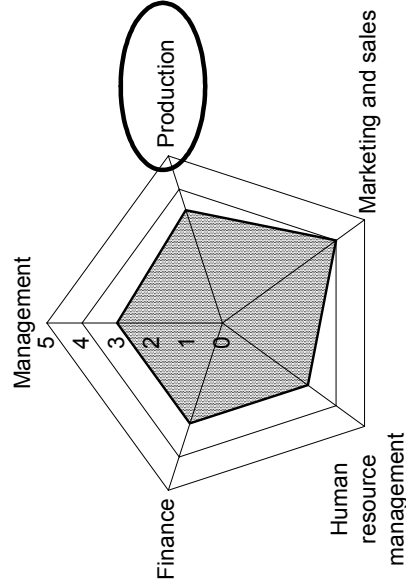
- Interested Conditions, key points, etc. The company wants to make shift to modern management by achieving cost reduction, productivity improvement, and other relevant goals.
- Not interested

Company Code	1/6
RO-9	

Table 3.11 Participating Company 3 of Model Project 1 Corporate Diagnosis Chart

Date of diagnosis:	November 25, 2004
Company name:	FUNDICION GATTI Orlando A. Caamano (Asesor y Representante S.R.L. Comercial)
Team member:	Fukase, Wakamatu, Nakajima, Yamamoto / INTI : Castaño
Evaluator:	Nobushige Fukase

Evaluation Results	
Overall	
Management	3
Production	3.4
Marketing and sales	4
Human resource management	3
Finance	3
Quality	4
Cost	3
Process	3
Production technology	3
Machinery and equipment	4
Materials control/procurement/outsourcing	3
Inventory	4
Production infrastructure	3



Company Code	2/6
RO-9	

Table 3.11 Participating Company 3 of Model Project 1 Corporate Diagnosis Chart

1. Evaluation Results

1.1. Overall

Item	Degree of importance (up to two)	Comment	Recommendations for Kaizen
Management		<p>The company is managed by the sole owner in 1947, who is still the president and has been renewing and upgrading production equipment and process to this date. It has 65 employees and produces approximately 500 tons of castings per month. It has backlogs that exceed production capacity and is behind delivery schedule to affect customers. The company is one of five foundries of this capacity class in Argentina. It is considering the upgrading of production equipment and plans to boost monthly capacity to 1,000 tons.</p> <p>It purchases a core molding (green sand) machine to replace the dilapidated one at \$500,000 and plans to install it in next June. Also, it plans to introduce a static pressure core molding machine from a Japanese manufacturer by August 2007.</p>	<p>Care should be taken in the installation of a new line, which often causes trouble and leads to a temporary decrease in production.</p> <p>Proper training should be given for workers to ensure smooth startup within a short period of time.</p>
Production	O		
Marketing and sale		<p>The company manufactures and sells, upon order, castings (gray iron and ductile iron) used for automobiles and agricultural machinery.</p> <p>Customers are large manufacturers including Transmissions Argentinas S.A. (Carraro Group: 65% of the company's production are supplied), John Deere Argentina S.A., and Metalurgica Kysmar S.A., which machines and supplies the company's castings to Toyota Argentina S.A.</p> <p>At present, the company has backlogs that exceed its production capacity and the foundry is operated overtime and on Saturdays.</p>	<p>Judging from the foundry's existing equipment and production skills, it can make a wider range of products. If sales activity is reinforced, it will likely be able to win much more orders.</p>

Table 3.11 Participating Company 3 of Model Project 1 Corporate Diagnosis Chart

Human resource management	○	<p>1. To meet increasing demand, the company recruits employees. As it cannot find enough workers in an area near the foundry, recruitment is extended to a wider area. The company stopped hiring during the previous recession and now faces the shortage of experienced workers.</p> <p>2. The company hires a consultant (Ing. Orlando A. Caamano) who comes to the company from Buenos Aires for one week each month and teach the would-be successor (third generation) and factory engineers.</p> <p>The young cadre is willing to learn and is expected to become the good management team.</p>	
Finance		<p>A formal balance sheet is produced annually, and in-house check is made twice per year. Target costs are established for each process, such as melting, casting, and finishing, and are compared with actual results.</p>	

1.2 Production

Item	Degree of importance (up to two)	Comment	Recommendations for Kaizen
Quality		<p>1. Quality assurance system The company has obtained ISO9002 certification.</p> <p>2. Quality assurance in the production process A standard set of equipment and instruments, such as a CE meter, a spectrometer, a thermometer, a hardness gauge, and a sand tester, is available and widely used.</p> <p>3. Rejection rate The rejection rate within the foundry (casting stage) is reported to be 2.0%, with the rejection rate of 1.0% due to a casting defect discovered in the machining process. The company claims that they are at good levels in the country.</p> <p>The primary cause for such defect is sand inclusion, which seems to be caused by the inability to control temperature of recovered sand.</p>	<p>1. Quality assurance system A standard set of equipment and instruments required for quality assurance is provided in the process, and there is no significant problem.</p> <p>2. Rejection rate While the present rejection rate is low from the country's standards, it is recommended to improve quality control with a goal to reduce the rejection rate by half and thus meet applicable international standards.</p>

Table 3.11 Participating Company 3 of Model Project 1 Corporate Diagnosis Chart

Cost		The company establishes process-based target costs for each product and grasps actual cost data for each process.	To review target costs at the time of change in material purchase cost or of process change and revise them as required. To identify a cause for a large cost variance between target and actual figures for each process.
Process		Based on actual orders, a monthly production plan is established. Then, a detailed production schedule is produced by computers.	There is no serious problem.
Production technology	○	Information on production equipment and technology is collected from all over the world and is used for continuous improvement of the production system, coupled with equipment and process upgrading. Recently, the company has changed its core molding method from shell core to cold box for the purpose of promoting cost reduction, man-hour saving, and quality improvement. The company is also working with upgrading of the sand treatment system and the molding line.	The most important challenge for the company is to start up the sand treatment system and the high-speed, static pressure molding machine as early as possible after its installation. It is desirable to provide workers with pre-operation training at the manufacturer.
Machinery and equipment		Melting: Intermediate frequency electric induction furnaces (two furnaces/one power source, 3,500 kw, melting capacity of 5 tons per hour) – there is no significant problem in terms of equipment and layout Molding: An automatic molding line (50 frames/hour; frame size 810 x 710 x (250 + 250)); the company is now considering the introduction of a Japanese-made static pressure molding machine (120 frames per hour) by August 2007. Core: Cold box, core making machine, which has been introduced very recently to replace the previous shell core type. Sand mixing machine: It is very aged and will be replaced in June 2006.	It is a good practice to use an old machine through modification and repair. However, as the company receives orders that exceed its capacity and are expected to increase further in the future, it makes sense to purchase a new machine so long as cash flow permits it. It will also lead to quality improvement.

Company Code	5/6
RO-9	

Table 3.11 Participating Company 3 of Model Project 1 Corporate Diagnosis Chart

Materials control/ procurement/ outsourcing		Molding materials are largely imported. They are classified into three types (cast iron, steel scraps, and returned materials) and kept in a designated storage. Shot blasting for shaking out is partially outsourced.	As John Deal and other customers find the company as having a tendency to be delayed in delivery, production management should be reviewed and improved, including suppliers and contractors.
Inventory		The foundry is usually operated at capacity to meet schedule and have few finished products in inventory. As for molding materials, inventory seems to be adequate.	
Production infrastructure	○	<p>The company has many patterns (molds), which are kept in stacks and well maintained.</p> <p>There is no problem relating to equipment layout and the working environment of the melting shop.</p> <p>Inside the foundry, however, the working environment deteriorates with much dirt in the floor shop.</p> <p>Sand is scattered in the sand treatment and product finishing shop.</p>	

2. Current state of IT use

<ol style="list-style-type: none"> 1. <i>Does your company operate your own Web site for promotion of your products?</i> We have our own Web site (www.pilar-sfe.com/ar/gatti). Soon "pilar-sfe." will be deleted because it is in countryside. 2. <i>Do you use the Internet to find trade partners? If so, which network do you use? Who is hosting the network?</i> Not particular. 3. <i>Do you use e-commerce for placing or receiving a purchase order to or from your trade partners?</i> 4. <i>Do you use any ICT-applied system tool for accounting, sales management, and production management purposes?</i> Computers are used for production management, accounting, and order placing/receiving management. 5. <i>What type of ICT technology system tool do you use for product design, production, and technological development applications?</i> A 3D AutoCAD system was introduced two months ago for mold designing and will be used in full scale. 6. On a five-point scale, the current state of IT use is rated as 1.5.
--

Company Code	6/6
RO-9	

Table 3.11 Participating Company 3 of Model Project 1 Corporate Diagnosis Chart

3. Overall evaluation

Although the foundry's molding and sand mixing machines are aging, they form an automated molding line with a large frame size and seem to be capable of producing castings used for a variety of applications. Also, the molding line can produce both gray and nodular cast iron, with sufficient production skills. In fact, there are only five foundries in the country, which have a molding line of this capability and the company's foundry is one of them. As Argentine industry is expected to recover, the company has strong growth potential to enjoy increasing demand.

It is respectable that the company understands its own strengths and weaknesses and is engaged in equipment modernization and the fostering of its successor.

The company can develop and grow further if it raises employees' morale and awareness through 5S and small group activities.

If the company is selected for the model project, issues relating to production equipment and engineering technology can be addressed, and management techniques used in Japan, such as small group activities, are applicable and become effective.

4. Guidance record

Findings and recommendations presented to the management at the time of meeting and factory diagnosis are summarized as follows.

1. Factory diagnosis revealed that sand was disorderly scattered in the sand mixing shop. The team pointed out the need for daily cleaning and housekeeping (3S) and proposed small group activities focusing on 5S, which would be required in parallel to renewal or replacement of the molding line.
2. As the company is making major investment to renovate the sand mixing equipment and the molding line, the work system should be reviewed to see if the foundry can operate the new equipment and line efficiently and the company should send selected workers to manufacturers for pre-installation training.

As the ability of the company to start up the renovated line quickly is expected to govern the future growth, the team proposed sufficient pre-training and pre-evaluation.

5. Interest in participation in the model project

Interested Conditions, key points, etc. Production management

Not interested While the company is confident in its system, it wishes to be evaluated under Japanese criteria.

Company Code	1/6
RF-5	

Table 3.12 Participating Company 4 of Model Project 1 Corporate Diagnosis Chart

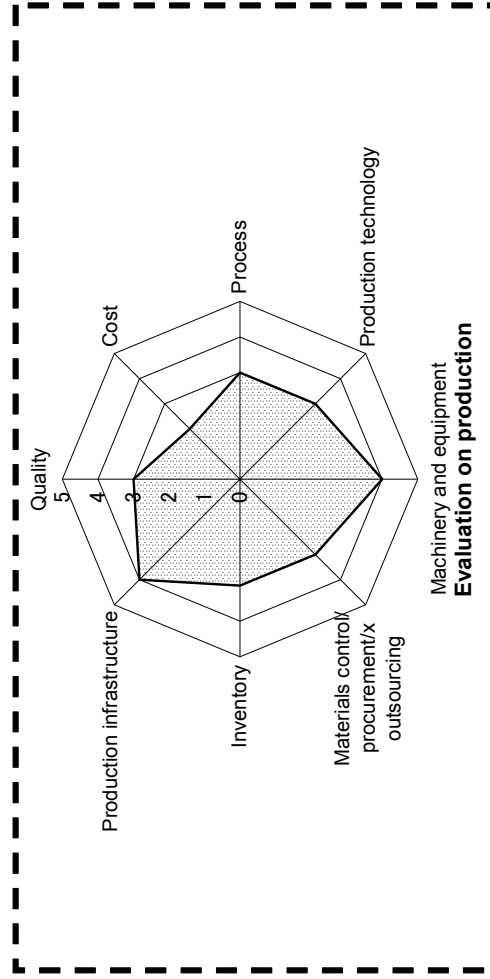
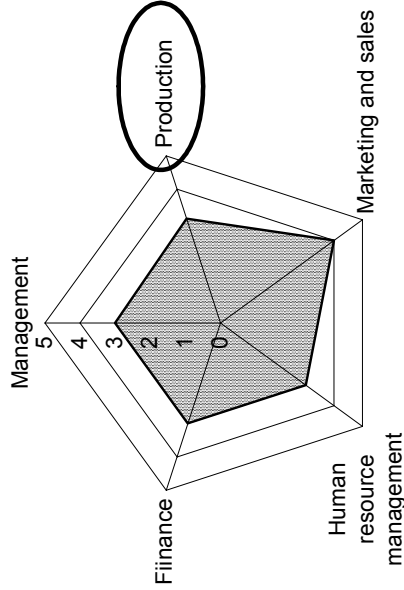
Date of diagnosis:	November 27, 2004
Company name:	TOPLINE ENGINEERING Nestor Omar Alberto (Vice-Presidente)
Team member:	Fukase, Hata, Nakajima, Moriguchi / INTI : Gustavo, Natalia
Evaluator:	Nobushige Fukase

Evaluation Results

Overall

Management	3
Production	3.1
Marketing and sales	4
Human resource management	3
Finance	3

Quality	3
Cost	2
Process	3
Production technology	3
Machinery and equipment	4
Materials control/procurement/x outsourcing	3
Inventory	3
Production infrastructure	4



Company Code	2/6
RF-5	

Table 3.12 Participating Company 4 of Model Project 1 Corporate Diagnosis Chart

1. Evaluation Results

1.1. Overall

Item	Degree of importance (up to two)	Comment	Recommendations for Kaizen
Management		<p>The company was established in 1995 as a joint venture with TOPLINE of the U.S., and commercial operation was started in July 1996. It manufactures cylinder heads for the automotive aftermarket. The factory is made up of a foundry and a machining shop. With 35 employees, the factory produces cylinder heads and other automotive parts at a rate of 15 tons (8,000 pieces) per month. The foundry has installed a low pressure (220 kg) casting machine which is in trial production under technical assistance of a university professor in Buenos Aires. It plans to install two 700 kg casting machines by mid-2007. It has recently purchased a cold box core making machine, which is currently in operation. The machining shop is fairly modern, equipped with a number of numerically controlled machine tools.</p> <p>The company is family operated but intends to make a shift to modern management in the future.</p>	<p>Use of a low-pressure casting machine is expected to improve product yield and reduce the rejection raise. It is therefore important to bring it to commercial production as early as possible.</p>
Production	○		
Marketing and sales		<p>The company's products are entirely supplied to the automotive aftermarket. Its customers are around 15 in Argentina and 12 in other countries. Exports are made to the EU (including Italy, Spain and France), Paraguay and Uruguay. Export accounts for 60% and domestic sales 40%. Most products are copied from parts for European cars, and the company intends to make aftermarket parts for Japanese cars.</p> <p>Product development is carried out in two ways. First of all, the company obtains a sample product from its trade partner, based on which the copied product is made in volume. Secondly, the company obtains a sample from its own channel and copies it for mass production. The ratio of the former to the latter is about 50:50.</p> <p>At present, the company churns out cylinder heads for eight models at a rate of 6,000 units per month. As volume production of a limited number of models is more profitable than small-lot production of a variety of products, the company focuses on product types that are suitable for volume production.</p> <p>As OEM production requires larger production capacity and stricter quality control, personnel whom the team interviewed stated that the company had no intention to make OEM product</p>	<p>Judging from the present equipment and technology, the company is capable of making OEM products if it reinforces and enhances production management. It is therefore recommended to make efforts for improvement of production management techniques and upgrading of production equipment for OEM production.</p>

Company Code	3/6
RF-5	

Table 3.12 Participating Company 4 of Model Project 1 Corporate Diagnosis Chart

Human resource management	○	As Rafaela is located in an area that has originally developed as a stock farm area and there is no organization to provide industrial education, there is the lack of labor force that can work at a production facility immediately. The company therefore has to hire and train inexperienced persons from the local area. Because of the shortage of skilled workers, the company cannot meet the delivery schedule in many cases. It takes around one year and half to train a new employee to a worker with required skills. The company hires four designers who make die drawings from an obtained sample product, but dimensional measurement of the sample, is commissioned to INTI because the company does not have a three-dimensional measuring instrument.	As the manufacturing of castings requires much more knowledge and experience than other trades, transfer of skills of experienced workers should be made on an OJT basis.
Finance		The company once faced financial difficulty and received support from TOPLINE. Now, it is operated by its own funds and does not borrow from banks or other sources.	

1.2 Production

Item	Degree of importance (up to two)	Comment	Recommendations for Kaizen
Quality		<p>1. Quality assurance system The company has obtained ISO9001 (year 2000 version) certification.</p> <p>2. Quality assurance in the production process 1) Foundry: For aluminum alloy ingots, each shipment is accompanied by a mill sheet and the company has chemical analysis conducted by an outside laboratory once per month. The foundry does not have necessary measuring and testing equipment, including the thermometer, hardness gauge and sand tester. 2) Machining shop: Dimensions are measured at each machine tool by using a standard set of instruments, such as the micrometer and height gauge.</p> <p>3. Rejection rate The rejection rate within the factory is in the range between 10% and 12%, of which 8-10% for casting-related defect and around 1.5% for machining defect. Machining-related defects occur mainly due to incorrect or poor tool hold.</p> <p>4. Casting yield Yield in the casting process (product weight/casting weight), although data are not collected, is estimated at around 60%.</p>	<p>In the machining process, it is imperative to inspect an initially machined product (initial inspection) in order to prevent recurrence of defects on an incremental scale.</p> <p>1. Quality assurance system Process equipment relating to quality assurance is well maintained and does not present any problem.</p> <p>2. Rejection rate It is important to reinforce quality management to reduce the rejection rate by half and achieve international class quality.</p>

Table 3.12 Participating Company 4 of Model Project 1 Corporate Diagnosis Chart

Cost		<p>While target costs are established, actual costs are not known.</p> <p>The company feels that it takes an additional cost (labor) to determine actual costs and so far as profits are made, actual costs are not essential information.</p>	<p>At present, cost accounting is made in a very primitive way of comparing sales and disbursements. At least, target and actual costs for each process should be established and determined. Otherwise, effectiveness of capital investment and a process that requires improvement cannot be determined.</p>
Process		<p>Based on actual orders, a monthly production plan is prepared, and then, a detailed production plan is developed by computer.</p>	<p>No problem is observed.</p>
Production technology	○	<p>The company attempts to introduce new technologies by collecting information on latest equipment and technology.</p> <p>Most recently, the company has shifted the core making method from the shell type to the cold box type for the purpose of promoting cost reduction and quality improvement.</p> <p>As for casting, the company has installed a low-pressure casting machine and is engaged in trial production of cylinder heads under guidance of a university in Buenos Aires.</p>	<p>A key factor for the company's future growth is its ability to bring new low-pressure casting machines (700 kg) into commercial production within the shortest practicable period of time</p> <p>Once production using the low-pressure casting machine begins, the casting yield is expected to increase significantly, while defects such as gas defect will decrease.</p>
Machinery and equipment		<p>As the factory started commercial operation in July 1996, the building and production equipment is very new and modern.</p> <ol style="list-style-type: none"> 1. Foundry The company has been aggressively introducing new equipment, which has not been used previously, such as the cold box type core making machine and the low-pressure molding machine. 2. Machining shop Many NC machines are used and computer-controlled in a centralized manner by placing control systems in the central part of the factory. The factory is well lit and the inside is clearly visible. 	
Materials control/ procurement/ outsourcing		<p>Aluminum alloy, which is a molding material, is locally procured at a rate of 15 tons per month. Weekly shipment of 3-4 tons is received.</p>	
Inventory		<p>As the factory is busy in meeting the delivery schedule and few products are in stock. The inventory level of molding materials is one week and seems to be adequate.</p>	<p>There is no problem relating to products and materials.</p>

Company Code	5/6
RF-5	

Table 3.12 Participating Company 4 of Model Project 1 Corporate Diagnosis Chart

Production infrastructure	○	<p>The company obtained ISO9001 certification in 1994 and has recently renewed it to the year 2000 version.</p> <p>In this connection, the company hired an outside consultant for technical assistance.</p> <p>One month earlier, small groups were organized and started activities to achieve specified goals.</p> <p>The quality committee is held monthly, where members and other employees can participate in discussion.</p> <p>The explanation on the PDCA cycle, a slogan, and other information are posted on a notice board of the foundry.</p> <p>In the review process relating to ISO9001 certification, small group activities were praised.</p> <p>Reference information:</p> <p>Outside consulting organizations are consulting firms in Cordova, CDE, and INTI.</p> <p>The consultant is selected according to relevant evaluation criteria, including peer review, qualification, and fee.</p>	It is expected to see success of small group activities that were started one month earlier, and it will become a good example of such activity in Argentina.
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2. Current state of IT use

1. *Does your company operate your own Web site for promotion of your products?*
Yes, we have own Web site (www.topline.com.ar).
2. *Do you use the Internet to find trade partners? If so, which network do you use? Who is hosting the network?*
Our Web site is linked to TOPLINE in the U.S. and is proven to be useful.
3. *Do you use e-commerce for placing or receiving a purchase order to or from your trade partners?*
E-commerce has not been used.
4. *Do you use any ICT-applied system tool for accounting, sales management, and production management purposes?*
Used for accounting, order processing, invoicing, inventory recording purposes. Production management is done manually and we want to computerize it.
5. *What type of ICT technology system tool do you use for product design, production, and technological development applications?*
AutoCAD is used by five part-time employees (college students) who perform a variety of tasks, ranging from model input to shape design. Note that dimensional data are measured by a three-dimensional measuring instrument at INTI Rosario and are input to the computer.

Overall rating: On a five-point scale, the current state of IT use is rated as 2.0.

Company Code	6/6
RF-5	

Table 3.12 Participating Company 4 of Model Project 1 Corporate Diagnosis Chart

3. Overall evaluation

The company has started commercial operation less than 10 years ago and its building and machine tools are relatively new. The foundry has been introducing new production processes with active, organizational efforts to use new equipment. In this regard, the company has potential to continue growth. The company embarked on a quality improvement drive based on small group activities one month ago, which is expected to produce results. We intend to watch the progress.

At the same time, the company is basically content with its business focusing on the aftermarket and clearly states that it has no intention to go into the OEM market that demands strict requirements in terms of quality and delivery time. Together with the fact that the company is a subsidiary of a U.S. manufacturer, it has resources and capability to improve operation and management without support under the model project.

4. Guidance record

Findings and recommendations presented to the management at the time of meeting and factory diagnosis are summarized as follows.

1. To prevent repetitive and intensive occurrence of defects in the machining process, initial inspection (inspection of the first product that has come out of the process) should be carried out.
2. Judging from the present equipment and technology, the company is capable of making OEM products if it reinforces and enhances production management. It is therefore recommended to make efforts for improvement of production management techniques and upgrading of production equipment for OEM production.
3. The present rejection rate is very high. It is important to reinforce quality management to reduce the rejection rate by half and achieve international class quality. It is more effective if the effort is linked to small group activities.
4. Target and actual costs for each process should be established and determined to measure effectiveness of capital investment and determine a process that requires improvement.

5. Interest in participation in the model project

- Interested Conditions, key points, etc. Improvement of overall management Productivity improvement
- Not interested

Company Code	1/5
CO-1	

Table 3.13 Participating Company 5 of Model Project 1 Corporate Diagnosis Chart

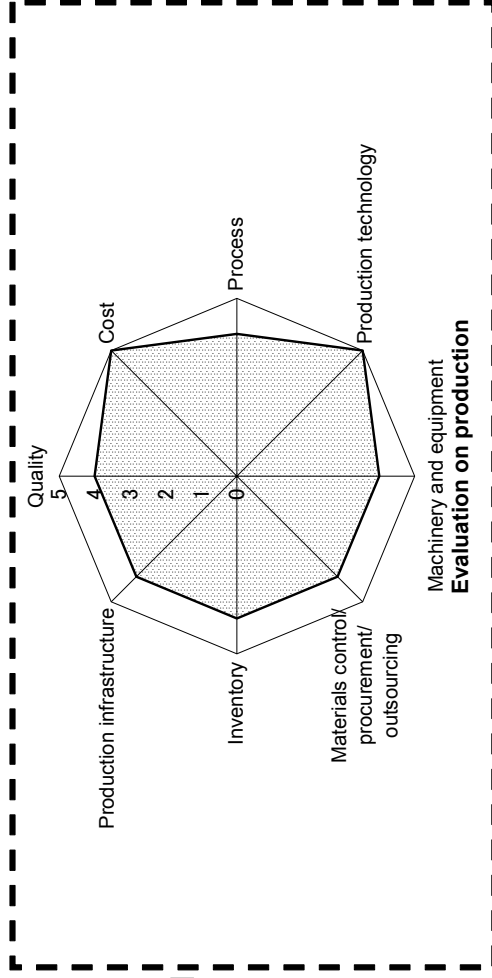
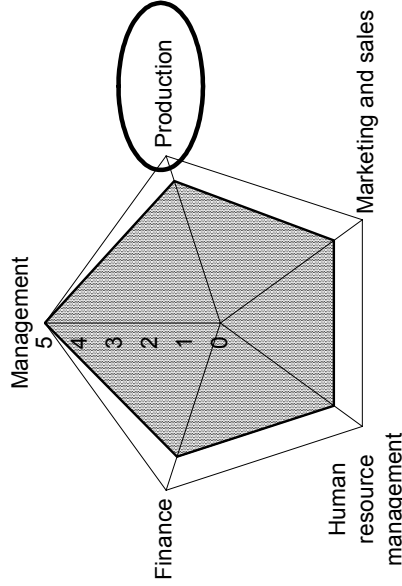
Date of diagnosis:	November 29, 2004
Company name:	Rubol S.A.I.C.F. Daniel Galliussi
Team member:	Hata, Fukase, Nakajima, Yamamoto / INTI ; Rousset, Talaganiis
Evaluator:	Akira Hata

Evaluation Results

Overall

Management	5
Production	4.3
Marketing and sales	4
Human resource management	4
Finance	4

Quality	4
Cost	5
Process	4
Production technology	5
Machinery and equipment	4
Materials control/procurement/outsourcing	4
Inventory	4
Production infrastructure	4



Company Code	2/5
CO-1	

Table 3.13 Participating Company 5 of Model Project 1 Corporate Diagnosis Chart

1. Evaluation Results

1.1. Overall

Item	Degree of importance (up to two)	Comment	Recommendations for Kaizen
Management		The company was established in 1965 and has 58 employees. It primarily makes forgings used in automobiles and OEM supply to Volkswagen accounts for 67% of the total. The president is the third generation and is 38 years old. It is commendable that he listens to employees' opinions and suggestions, including field workers', and tries to apply them to actual improvement. In particular, small group activities are effectively used for management.	To establish medium- and long-term management plans with future visions.
Production	○	 	
Marketing and sales		In addition to Volkswagen, the company supplies aftermarket parts for Scania, Carraro and Ford. Parts that require machining are outsourced, while machining of dies is made in-house.	At present, the company's products are mostly sold to the domestic market. Efforts should be made for export promotion.
Human resource management	○	Of 58 employees, 30 are directly engaged in production and conduct small group activities by organizing 6 groups. Mr. Bruno, who served as a spokesman on the date of our visit, was a consultant teaching small group activity to the company until six months ago. He now works for the company and teaches a night course on kaizen at an industrial college twice per week. The company previously conducted in-house education for workers who graduated from junior high schools so as to allow them to obtain a high school certificate. Now, the company hires at least high school graduates.	It is highly valued that small group activities are enthusiastically conducted. Now, the company needs to conceive ways to make them permanent, long-term activities.
Finance		The company keeps steel materials equivalent to two-month consumption in stock, which is a large burden on working capital. It is required to pay for domestic suppliers even if delivery is delayed.	So far, working capital and capital investment projects have been self-financed. In the future, use of financial institutions should be considered.

Company Code	3/5
CO-1	

Table 3.13 Participating Company 5 of Model Project 1 Corporate Diagnosis Chart

1.2 Production

Item	Degree of importance (up to two)	Comment	Recommendations for Kaizen
Quality	○	<p>1. Quality check is properly carried out, including acceptance inspection on purchased steel materials, measurement of heat temperatures in the forging process, dimensional check for acceptance or rejection, and inspection using jigs in the intermediate process, including quality verification. The company has obtained ISO9000 series certification.</p> <p>2. As seen from data posited in the display room, per cent defectives seem to be around 1%. It is in an acceptable range in consideration of characteristics of forgings.</p> <p>3. During field observation, modification was made in the key processes using a press.</p>	For inspection of mass produced products, use of jigs and tools is essential and should be expanded in the future.
Cost		As the materials cost accounts for a high percentage of the forging cost, it is important to promote its reduction.	Efforts should be made to bring the yield of steel materials in the production process to as close as 100%.
Process		The production process consists of round bar cutting, heating, forging, trimming (if necessary); press work, shot peening, cleaning, and completion inspection. Among them, the process between the heating furnace and forging is highly mechanized and is operated efficiently.	Despite unfavorable working conditions, workers performed their jobs with pride. Care should be taken to foster teamwork.
Production technology		Annual production totals around 5 million units. As the company is required to supply a large variety of products, lot size is relatively small and ranges between 3,000 and 12,000 units. The forging line is highly automated and is considered to be at high levels.	We would like to know if this level of automation has been carried out solely by the company. In any case, the result demonstrates the company is capable of accomplishing the high level of automation and is expected to expand it to other processes.
Machinery and equipment	○	There were seven automatic forging lines (according to our estimate) and were busily operated under very hot and dusty conditions, except for an idling large press (for cum rods).	As proper maintenance of automatic machines is indispensable, staff training and upgrading of equipment should be given of priority.
Materials control/ procurement/ outsourcing		In Argentina, there is only one supplier of steel materials (Sapra iron works – Acero Zapca). To increase supply sources, the company has decided to make procurement from Brazil, starting in December. It consumes 250 – 300 tons of steel materials per month. The alternative source is expected to improve the company's negotiating position in terms of delivery schedule and price.	In the country, the company is required to make payment as specified in the contract, even if delivery is delayed. Renegotiation of the contract terms seems to be necessary.

Company Code	4/5
CO-1	

Table 3.13 Participating Company 5 of Model Project 1 Corporate Diagnosis Chart

Inventory	The company has a two-month stock of steel materials, totaling 33 types.	The current inventory level is understandable from the viewpoint of avoiding a risk relating to delayed delivery, while the factory has an ample space for storage. In any case, it is desirable to reduce inventory as much as possible.
Production infrastructure	Proper maintenance of automatic equipment supports smooth operation of the forging process. Also, dimensional control is effectively done by using a three-dimensional measuring instrument held at the laboratory.	The company is fully equipped with equipment to support the proper functioning of the production line. It is recommended to use INTI for calibration of measuring instruments (weight, length, and temperature).

2. Current state of IT use

<ol style="list-style-type: none"> 1. <i>Does your company operate your own Web site for promotion of your products?</i> We have our own Web site (www.rubol.com.ar). 2. <i>Do you use the Internet to find trade partners? If so, which network do you use? Who is hosting the network?</i> We do not use the Internet for business transaction, but we receive drawings and data transmitted by customers. 3. <i>Do you use e-commerce for placing or receiving a purchase order to or from your trade partners?</i> No, we do not use e-commerce. 4. <i>Do you use any ICT-applied system tool for accounting, sales management, and production management purposes?</i> At present, we use Excel for tabulation. We are developing a total system covering accounting, sales and inventory management, which will be completed in December. Soft development is outsourced to a Brazilian company. 5. <i>What type of ICT technology system tool do you use for product design, production, and technological development applications?</i> AutoCAD is used for product design, and the FEM system for strength analysis and structural analysis. <p>On a five-point scale, the current state of IT use is rated as 2.5.</p>

3. Overall evaluation

<ol style="list-style-type: none"> 1. The company's foundation was largely built by the founder who started his career at a local blacksmith's shop. The third-generation president seems to manage the company earnestly on the basis of legacy inherited from the former president (employees and resources). 2. The company actively promotes small group activities. The president participates in meetings of six groups, twice per year. It is respectable that he attends at the meetings that start at 6:00 a.m. 3. The company is highly rated in the level of production technology. 4. The company's production technology relies much on proper equipment maintenance, and continuous efforts should be made to upgrade workers' skills and equipment.
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Company Code	5/5
CO-1	

Table 3.13 Participating Company 5 of Model Project 1 Corporate Diagnosis Chart

4. Guidance record

1. The company has core business in forging and seems to receive high evaluation from Volkswagen. It is desirable to expand into higher value added areas by entering the subsequent machining process.
2. Small group activities started to work well in the second half of this year. Efforts should be made to establish them as an effective instrument to promote sales and growth in the future.
3. Medium- and long-term management plans should be made on the basis of the company's future vision. In other words, executive managers (management) should make concerted efforts in a variety of areas, including product planning, capacity expansion planning, human resource development, enhancement of IT, and export promotion.

5. Interest in participation in the model project

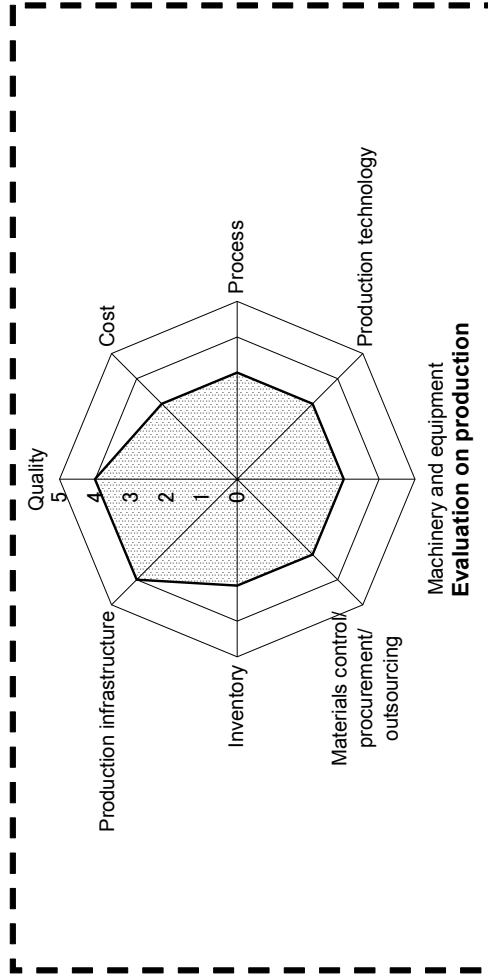
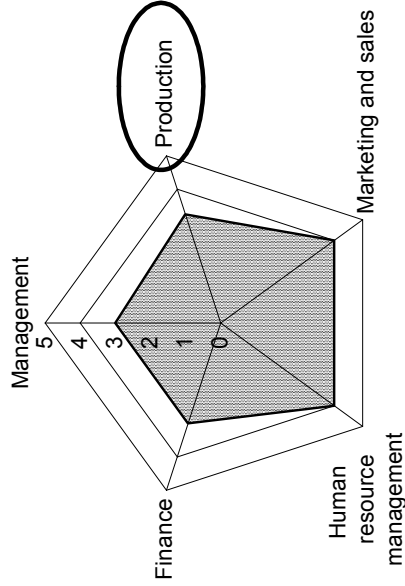
- Interested Conditions, key points, etc.
1. Further promotion of small kaizen activities
 2. Vitalization and establishment of small group activities
 3. Export promotion
 4. Development of business to higher value added products by expanding into the machining process
- Not interested

Table 3.14 Participating Company 6 of Model Project 1 Corporate Diagnosis Chart

Date of diagnosis:	November 30, 2004
Company name:	FAESA(FABRICA ARGENTINA DE ELASTICOS SAIC) S.A.I.C. Osvaldo Cassanelli (Director)
Team member:	Fukase, Kato / INTI : Alvarez
Evaluator:	Nobushige Fukase

Evaluation Results	
Overall	
Management	3
Production	3.3
Marketing and sales	4
Human resource management	4
Finance	3

Quality	4
Cost	3
Process	3
Production technology	3
Machinery and equipment	3
Materials control/procurement/outsourcing	3
Inventory	3
Production infrastructure	4



Company Code	217
CO-3	

Table 3.14 Participating Company 6 of Model Project 1 Corporate Diagnosis Chart

1. Evaluation Results

1.1. Overall

Item	Degree of importance (up to two)	Comment	Recommendations for Kaizen
Management		<p>The company was founded in 1948 and is currently operated by Cassenelli brothers who are sons of the founder. In the 1960s, it moved its factory to the present area where automakers were located. The company is now working with modernization of management in consultation with a university professor. It is specialized in manufacture of flat springs for transportation trailers, semi-trailers, and trucks.</p> <p>It has 33 employees and makes approximately 240 tons of products per month. Its annual sales amount to 4.7 million pesos. It develops new products jointly with its customers and under assistance of INTI. It is also engaged in cost reduction and quality improvement initiatives, including reduction of setup time.</p> <p>Before the recent recession, it borrowed from a bank to purchase cold rolling and other machines from the UK. It weathered the recession and repaid the loan. Now there is no outstanding loan or debt.</p>	<p>The company is actively engaged in product development (jointly with its customer and INTI) and modernization of management in consultation with a university professor.</p>
Production	○		
Marketing and sales	○	<p>The company is recently facing intensive competition with foreign products including Brazil and Columbia. Around 10% of products are exported to Paraguay, Uruguay and Chile. The company also receives inquiries from Brazil and Bolivia.</p> <p>It has received a joint venture proposal from STANDEMS of Canada.</p> <p>It sells flat spring assemblies weighing 5 kg – 300 kg each. There are as much as 2,200 product types, which are sold in a single unit.</p> <p>Market breakdown is OEM 56% and the aftermarket 44%. As for the OEM market, the company supplies to around 20 customers and top three customers – SOLA & BRUSA (holding 50% of the domestic trailer market), DMBU, and METALUGICA BONANO – account for a combined share of 30%.</p> <p>Delay in delivery does not occur in the OEM market, but occasionally in the aftermarket, because the company gives priority to urgent orders from OEM customers over aftermarket production.</p>	<p>Judging from the company's production equipment and technology, it can increase exports further by upgrading its production management. Thus, efforts should be made in this area.</p>

Table 3.14 Participating Company 6 of Model Project 1 Corporate Diagnosis Chart

Human resource management	The management consists of three-generations of the founder's family. The second-generation president is striving to modernize management before being taken over by his son. Human resource development for the management team seems to go well.	
Finance	The founder resigned Renault and established a flat spring manufacturer in 1948. Since then, the company is operated by three generations of his family, including brothers, with annual sales of 4.7 million pesos and 33 employees. It is the top manufacturer in the country's flat spring industry and is expected to grow further by leveraging its technology. It is now planning to reorganize its production management system under guidance of an outside consultant, but it lacks awareness of the need for cost management and needs improvement in the area. As it has high levels of production technology, it has high potential to compete in the international market if it improves production management.	Establishment of internal accounting rules As it is specialized in contract manufacturing of a variety of products in small lots, it is important to establish and maintain the standard cost system in order to estimate variable costs accurately and determine the break-even point. The effort should start with estimation of recent standard man-hours. Then, management accounting should be introduced, including the budget system. This is expected to have a significant effect on the flexible production system like the company's.

1.2 Production

Item	Degree of importance (up to two)	Comment	Recommendations for Kaizen
Quality		<p>1. Quality assurance system The company obtained ISO9002 certification in 1994 and renewed it to the 2000 version in May 2003.</p> <p>2. Quality assurance in the production process</p> <p>1) Steel materials are supplied with a mill sheet. Previously, a customer complaint was made and laboratory analysis of a delivered material revealed that its data were different from those specified in the mill sheet. Since then, sample materials are selected at random and sent to INTI for analysis.</p> <p>2) A field laboratory has various measuring instruments and testing equipment, such as a hardness gauge and an electromagnetic crack detector, and full-time staff performs sample inspection on finished products throughout working hours.</p>	<p>Quality management to be prepared for a risk of product liability is required. In addition to inspection on finished products, it is important to verify quality at each step of the production process and document and record results.</p> <p>The quality assurance system should also be established in the form of QC schedule sheet.</p> <p>It is important to establish rules and procedures as to who measures and records what (quality characteristics), when, where, by using what, as well as what measures are to be taken in the case of anomaly, and to enforce them accordingly in daily operation.</p>

Table 3.14 Participating Company 6 of Model Project 1 Corporate Diagnosis Chart

Cost		<p>Target costs are not set and actual costs are monitored. Thus, cost accounting is carried out intuitively.</p> <p>The consultant believes that the important thing is to secure overall profitability, rather than detailed cost accounting that requires additional labor cost. Also, the fact that the company makes profits now makes the monitoring of actual costs unnecessary.</p>	<p>In the increasingly competitive environment in the international marketplace, it is imperative to analyze costs in detail for effective and continuous cost reduction. Process-based target and actual costs must be available to identify bottlenecks and devise improvement measures. Without them, it is impossible to determine the effect of investment or pinpoint a process that requires improvement.</p>
Process		<p>Documentation such as work standards and procedures was not seen in the shop floor.</p>	<p>Work standards and procedures, and technical standards are documented and made known to everyone in the shop to facilitate transfer of production techniques and skills.</p>
Production technology	O	<ol style="list-style-type: none"> 1. A forklift is used for exchanging dies. 2. A worker's movement during bending operation is not efficient: he picks up a material from the floor and places it on the floor after bending. 3. Too many workers are engaged in materials handling that is carried out in three process steps (exit from the heat furnace, bending, and entrance to the quenching bath). 4. A heat treatment method suitable for the currently used materials (less costly than special steel) has been developed and established in cooperation of INTI. 5. Dies are generally designed and made within the company, except for complex ones that are outsourced. In-house making accounts 90% and outsourcing 10%. 	<ol style="list-style-type: none"> 1. A special carriage to transport dies should be made for the purpose. 2. Work should be redesigned to increase efficiency of the worker's motion. 3. Materials should be kept in a pallet, which can be opened on the side to allow easy access by the worker, and which is placed on a work bench. 4. Finished products are placed in a wheeled pallet to eliminate the need for transfer and transportation. 5. A simple robot should be introduced to transport work pieces from bending to the quenching bath. Also, a double-head rotating machine is installed to facilitate off-line setup for exchange of bending dies.
Machinery and equipment	O	<ol style="list-style-type: none"> 1. Layout and product flow The factory consists of two buildings and an adjacent stockyard for steel materials. The production process generally consists of receiving of steel materials, storage, cutting, edge machining and bending, heat treatment (quenching and tempering), descaling, coating, assembly, packaging, and shipment. However, the present layout, seemingly built up from piecemeal addition of machinery, results in wasteful movement of parts and products, failing to create smooth product flow. 2. Idling equipment Idling equipment is left in the factory, preventing efficient use of the work space. 	<ol style="list-style-type: none"> 1. The work space should be expanded to remove idling equipment. 2. Idling equipment, which may be reused in the future, can be kept in an available space, and otherwise it should be sold or disposed. 3. It seems to be difficult to improve the layout all at once. It is recommended to make an ideal layout plan, based on which improvement should be considered for a specific part of the layout where a bottleneck occurs.

Table 3.14 Participating Company 6 of Model Project 1 Corporate Diagnosis Chart

<p>Materials control/ procurement/ outsourcing</p>		<p>Steel materials are purchased from ACINDAR, local steel manufacturer, at a rate of 240 tons per month.</p> <p>The lead time from order to delivery is supported to be 30-60 days, but it usually takes more than 60 days. As a result, the company keeps 2.5 – 3 month inventory.</p> <p>The price of steel materials is up 24% compared to the beginning of this year.</p> <p>The company uses around 60 types of steel materials, which have the same quality but vary in terms of width and thickness.</p> <p>The stockyard for steel materials is long and narrow in shape to require extra time for receiving and shipment of stored materials.</p>	<p>The stockyard layout should be modified to reduce inefficient transshipment and transportation.</p> <p>The company also recognizes that the stockyard constitutes a major bottleneck and is considering its modification.</p> <p>Targets should be set as follows:</p> <ol style="list-style-type: none"> 1. To eliminate unnecessary transshipment. 2. To minimize transportation by crane.
<p>Inventory</p>		<p>Inventory of steel materials ranges between 2.5 and 3 months (600 – 750 tons) and is kept in an outdoor open space and in the stockyard.</p> <p>Work-in-process is stocked in each shop.</p> <p>Finished products are kept in stacks that are in the center of the shop and are stacked on the floor.</p>	<p>An ideal layout plan should be made and the stockyard for finished products should be rearranged to make the actual layout closer to the plan.</p>
<p>Production infrastructure</p>		<ol style="list-style-type: none"> 1. Cut materials, work-in-process, and finished products are all stacked too high, creating work hazards at the time of piling and unpling. 2. Used gloves or tools are left on stacks that keep dies and molds. 	<ol style="list-style-type: none"> 1. In Argentina, the Labor Safety and Hygiene Act does not restrict height of stowage. To secure work safety, the company should establish internal rules to restrict such height. 2. Stacks should be assigned with serial numbers to store designated dies and molds and make them identifiable by any worker. 3. 3S (cleaning and other housekeeping) activities should be daily conducted in each shop.

Company Code	6/7
CO-3	

Table 3.14 Participating Company 6 of Model Project 1 Corporate Diagnosis Chart

2. Current state of IT use

1. *Does your company operate your own Web site for promotion of your products?*
We have our own Web site (www.faesacba.com.ar).
2. *Do you use the Internet to find trade partners? If so, which network do you use? Who is hosting the network?*
Our Web site receives 35-40 inquiries per month. In particular, those from Uruguay and Chile have resulted in purchase contracts. Negotiation is underway with a Brazilian company.
3. *Do you use e-commerce for placing or receiving a purchase order to or from your trade partners?*
Same as 2) above.
4. *Do you use any ICT-applied system tool for accounting, sales management, and production management purposes?*
Used for accounting, order management, production management, invoicing, and inventory recording purposes.
5. *What type of ICT technology system tool do you use for product design, production, and technological development applications?*
AutoCAD is used.

Overall rating: On a five-point scale, the current state of IT use is rated as 2.5.

3. Overall evaluation

The company has high levels of engineering technology, such as heat treatment techniques and production equipment, whereas it has weaknesses in production management, including quality control, production scheduling, inventory control, and factory layout design.

At present, it is working for modernization of management by hiring a university professor as consultant, who knows the founder very well and seems to be relied on by the management.

If the consultant understands and agrees with our ideas, we will be able to increase possibility of success significantly.

Based on the meeting with the management (during factory diagnosis and lunch), we have an impression that they have a strong intention to participate in the model project, and the consultant is highly interested in Japanese management and culture, so that there is no obstacle to implementation of the project in the company. We believe that a focus should be placed on the improvement of factory operation and management.

Company Code	7/7
CO-3	

Table 3.14 Participating Company 6 of Model Project 1 Corporate Diagnosis Chart

4. Guidance record

Findings and recommendations presented to the management at the time of meeting and factory diagnosis are summarized as follows.

1. Quality control and assurance

As the company supplies products that are related to car's safety, quality management should address a risk of product liability. It is therefore important to verify quality at each step of the production process and document and record results, in addition to inspection on finished products.

2. Factory layout

Machinery and equipment is not properly arranged, resulting in unnecessary movement of products. A layout modification should be planned to create smooth and efficient product flow.

Idling equipment should be kept in a designated location if there is possibility of reuse, or should be sold or disposed to ensure effective use of the factory space and help reduce inefficient movement of goods.

3. Solving bottlenecks

The results of factory diagnosis revealed inefficient movement of steel materials at the stockyard due to an improper layout. Also, we proposed automation and off-line setup in the bending and quenching processes. In fact, the company realizes these problems and is developing improvement plans.

4. Safety measures

Cut materials, work-in-process, and finished products are all stacked too high, creating work hazards at the time of piling and unpling. Although the Labor Safety and Hygiene Act in Argentina do not restrict height of stowage, the company should establish internal rules to restrict such height as the first step to ensure work safety.

5. Interest in participation in the model project

- Interested Conditions, key points, etc. Cost reduction (including the establishment of an adequate inventory level) Production management
- Not interested

Table 3.15 summarizes evaluation results of all the 41 companies. The average for their overall evaluation scores is 3.2 on a five-grade scale.

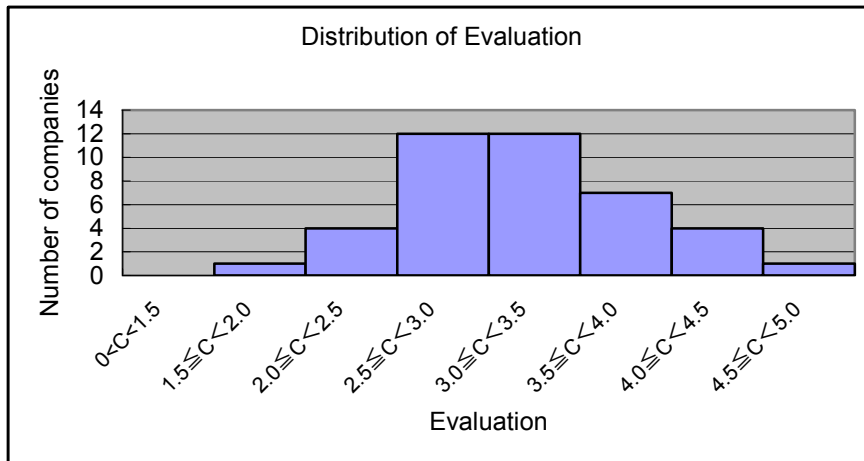
The study team had conducted the corporate diagnosis using the same five-grade scale method in Mexico and Thailand. The evaluation score of 3.2 of Argentina is almost the same as that of Mexico but a little bit lower than Thailand.

Table 3.15 Result of Corporate Diagnosis for 41 Companies

Code No.	Overall	Evaluation of 5 levels												
		Overall					Production							
		Management	Production	Marketing and Sales	Human Resource Management	Finance	Quality	cost	Process	Production Technology	Machinery & Equipment	Materials control/ procurement/ outsourcing	Inventory	Production Infrastructure
SM-1	2.5	3.0	2.3	2.0	2.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
SM-2	2.8	4.0	3.1	3.0	2.0	2.0	4.0	2.0	4.0	3.0	3.0	3.0	3.0	3.0
SM-3	2.5	2.0	2.6	3.0	2.0	3.0	3.0	2.0	3.0	2.0	3.0	4.0	2.0	2.0
SM-4	3.5	4.0	3.5	4.0	3.0	3.0	4.0	4.0	3.0	3.0	3.0	4.0	4.0	3.0
SM-5	1.5	2.0	1.5	2.0	1.0	1.0	2.0	1.0	2.0	2.0	1.0	1.0	2.0	1.0
SM-6	2.6	2.0	3.1	3.0	2.0	3.0	2.0	2.0	3.0	3.0	4.0	4.0	4.0	3.0
SM-7	4.0	4.0	3.8	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0
SM-8	3.1	4.0	3.3	3.0	3.0	2.0	3.0	3.0	4.0	3.0	4.0	3.0	3.0	3.0
SM-9	2.9	4.0	2.4	3.0	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	1.0	2.0
SM-10	2.9	3.0	2.5	3.0	3.0	3.0	3.0	2.0	3.0	2.0	2.0	3.0	2.0	3.0
SM-11	3.2	3.0	3.1	3.0	4.0	3.0	3.0	3.0	3.0	2.0	3.0	4.0	4.0	3.0
SM-12	2.8	3.0	3.1	3.0	3.0	2.0	3.0	3.0	3.0	3.0	4.0	3.0	3.0	3.0
SM-13	3.1	4.0	3.4	3.0	3.0	2.0	4.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0
SM-14	4.2	5.0	4.0	4.0	5.0	3.0	4.0	4.0	4.0	4.0	5.0	4.0	3.0	4.0
SM-15	3.5	3.0	3.4	5.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0	3.0	2.0	4.0
SM-16	2.9	3.0	3.5	3.0	3.0	2.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	4.0
Ro-1	3.5	4.0	2.5	4.0	4.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0
Ro-2	3.5	4.0	3.3	4.0	3.0	3.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0
Ro-3	3.0	3.0	2.9	4.0	2.0	3.0	4.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0
Ro-4	2.9	3.0	2.6	4.0	2.0	3.0	2.0	3.0	2.0	3.0	3.0	2.0	4.0	2.0
Ro-5	2.8	3.0	2.8	3.0	2.0	3.0	4.0	2.0	2.0	3.0	4.0	2.0	2.0	3.0
Ro-6	4.5	5.0	4.5	4.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	5.0	3.0	5.0
Ro-7	2.2	2.0	2.1	3.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	3.0	2.0	3.0
Ro-8	4.2	4.0	4.0	4.0	4.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Ro-9	3.3	3.0	3.4	4.0	3.0	3.0	4.0	3.0	3.0	3.0	4.0	3.0	4.0	3.0
Rf-1	3.6	4.0	3.8	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0
Rf-2	3.3	3.0	3.3	3.0	4.0	3.0	3.0	3.0	4.0	3.0	3.0	3.0	4.0	3.0
Rf-3	2.7	3.0	2.6	4.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	3.0
Rf-4	3.6	4.0	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	5.0
Rf-5	3.2	3.0	3.1	4.0	3.0	3.0	3.0	2.0	3.0	3.0	4.0	3.0	3.0	4.0
Co-1	4.3	5.0	4.3	4.0	4.0	4.0	4.0	5.0	4.0	5.0	4.0	4.0	4.0	4.0
Co-2	3.3	3.0	3.3	4.0	3.0	3.0	3.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
Co-3	3.5	3.0	3.3	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0
Co-4	3.4	4.0	3.1	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	2.0	2.0	3.0
Co-5	3.4	3.0	4.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	5.0	4.0	4.0	4.0
Co-6	2.5	3.0	2.3	3.0	2.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Co-7	2.5	2.0	2.3	3.0	2.0	3.0	3.0	3.0	1.0	2.0	2.0	3.0	2.0	2.0
Co-8	4.1	4.0	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	3.0	4.5
Co-9	3.5	4.0	3.6	4.0	3.0	3.0	4.0	3.0	3.0	4.0	4.0	4.0	3.0	4.0
Co-10	3.0	3.0	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0
Co-11	3.7	4.0	3.3	3.0	4.0	4.0	4.0	4.0	2.0	2.0	3.0	3.0	4.0	4.0
Average	3.2	3.4	3.2	3.5	3.1	2.9	3.4	3.0	3.1	3.1	3.2	3.2	3.0	3.2

Source : JICA Study Team

Fig. 3.31 plots the number of companies for each 0.5 point of the overall evaluation score. As shown here, 24 companies (approx. 60% of the total) are rated in the range between 2.5 – 3.5 points, which is equivalent to the middle-point range of the five-grade scale, from cottage industry level companies to OEM parts manufacturers serving the global market. Thus, the average technology levels of small- and medium-sized manufacturers in Argentina seem to be found in this range.



Source: JICA Study Team

Fig. 3.31 Distribution of Evaluation

Looking at the evaluation results in relation to the five areas, evaluation on “market and sales” is relatively high, while that on “finance” is low. As for the eight sub-items in the production category, “cost” and “inventory” received low scores.

Only a handful of companies serve exclusively to the OEM market, and many strive to expand sales and production by relying much on active repair parts markets (REMs), both domestic and export. This seems to be reflected in the relatively evaluation on “market and sales.”

“Finance” and “cost” are interrelated. While “finance” covers the internal accounting system, budget and fund management, and investment planning, “cost” that belongs to the domain of production deals with cost management, variance analysis between standard and actual costs, and break-even point analysis. The fact that many companies were rated low in the two categories reflects the current state of Argentine SMEs that they outsource even “tax accounting” to outside accounts and do not understand the basic concept of “management accounting.”

Inventory reduction is one of major issues relating to production management, but many of

SMEs in Argentina, which have gone through the series of drastic changes in the business environment, opt to hold excessive inventories in preparation for the future crisis. As a result, they do not understand the need for inventory control by directly linking production and demand, and the study team had to give a low grade in the area of “inventory.”

Tables 3.16, 3.17, and 3.18 compare overall scores of the 41 companies by the number of employees, city, and sector, respectively.

Table 3.16 Number of Employees and Overall Evaluation Score

Number of employees = N	Number of companies	Overall scores
$N < 50$	20	2.9
$50 \leq N < 100$	13	3.5
$100 \leq N$	7	3.4

Note: Employment data on one company are not known

Source: JICA Study Team

Table 3.17 City and Overall Evaluation Score

City	Number of companies	Overall scores
San Martín	16	3.0
Rosario	9	3.3
Rafaela	5	3.3
Córdoba	11	3.4

Source: JICA Study Team

Table 3.18 Sector and Overall Evaluation Score

Sector	Number of companies	Overall scores
Automotive parts	30	3.2
Agricultural machinery parts	13	3.0

Note: Seven companies supply both automotive and agricultural machinery parts and are included in both sectors

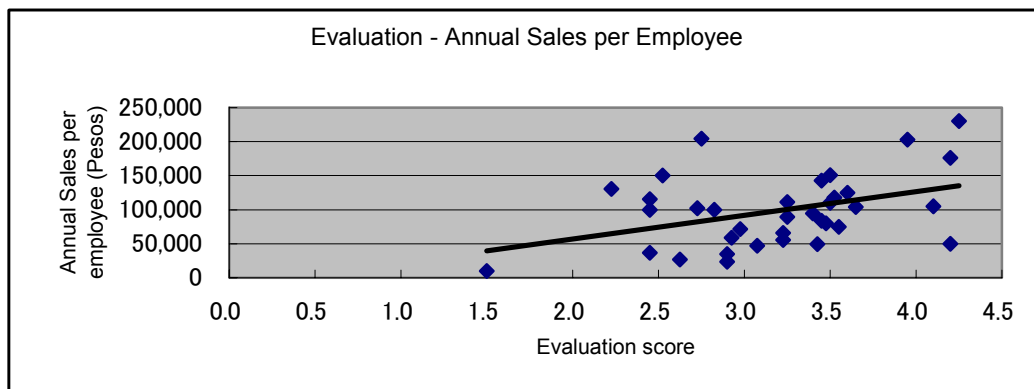
Source: JICA Study Team

Table 3.16 reveals that small enterprises having less than 50 employees receive very low scores. This explains the reason why 16 companies in San Martín are rated very low. The average number of employees of these companies is 40.3, well below those in other three cities, namely 125.2 in Rosario, 56.2 in Rafaela, and 86.1 in Córdoba.

When the item-based average scores for small enterprises with less than 50 employees are compared with those for large enterprises, the former is lower than the latter in all items,

especially the average score on “finance” is very low at 2.6. This is deemed to have caused the overall average score on “finance” for all the 41 companies to fall way below the overall average score, 2.9 vs. 3.2, as shown in Table 15. The trend is confirmed by data on San Martín and Rafaela, where the average number of employees is small and the average score on “finance” hovers at 2.6 for both cities.

Fig.3.32 plots sales per employee and the overall average score for 35 companies (not including SM-9) for which sales per employee has been calculated, indicating some degree of correlation between two indicators (correlation coefficient = 0.4), suggesting that, the higher the evaluation score of the company, the higher its sales per employee gets. On the other hand, there is no correlation between the OEM sales ratio in the automobile sector and the evaluation score, nor between the OEM sales ratio and sales per employee.



Source: JICA Study Team

Fig. 3.32 Correlation between Evaluation Score and Sales per Employee

3.3.3 Findings by Experts

Major findings on Argentine small- and medium-sized manufacturers by the study team’s experts who have performed the simplified corporate analysis are summarized as follows.

- a. A large number of SMEs went bankrupt during the economic crisis in 2001, and most companies that survived through it seem to be family operated, using their own funds. In fact, with exception of a few companies, most companies that participated in the corporate diagnosis project do not borrow money from external sources.
- b. Many companies made it clear that they were reluctant to make medium- or long-term plans as an aftermath of major changes they underwent after 1990, including the enactment of the Conversion Act, its repeal, and the ensuing economic crisis.
- c. Many automotive parts manufacturers supply products to both OEM and REM markets, including those that were specialized in OEM products and switched to REM after the

economic crisis. This is because many foreign-affiliated assembly manufacturers reacted to the economic crisis by reducing production in Argentina or relocating their factories to other countries, creating a painful experience for local suppliers. Now they still feel uneasiness about relying on the OEM market.

- d. At present, the REM market is booming, thanks to the recovery of the national economy. Some companies take a challenge in resuming the OEM business as they view strict quality and delivery requirements in the OEM market provide a good opportunity for improvement of their technology levels. Yet, many companies try to expand sales in the domestic and export markets by making capital investment and boosting production capacity under the assumption that they continue to serve the brisk REM market.
- e. As for engine parts for agricultural machinery, there are OEM and REM markets as in the case of automotive parts. On the other hand, there is no clear difference between the two markets for food processing equipment parts and implements of agricultural machinery.
- f. Aside from financial problems, problems commonly facing SMEs are: 1) the shortage of skilled workers; and 2) the need for upgrading business and production management techniques for productivity improvement. Especially, self-evaluation of SMEs and the view of the study team agreed on 2).
- g. As for the shortage of skilled workers, the study team heard from many companies that there is a nationwide shortage of workers who can adapt themselves to new technology and machinery because skills education and training as national undertaking was neglected as a result of a clear decline of the local manufacturing sector in the 1990s.
- h. To learn business and production management techniques, many companies hire consultants or participate in training programs provided by public and private organizations. However, many of training programs do not deal with problems on the shop floor and instead are designed to assist ISO certification.
- i. Many programs provided by public SME promotion organizations take up market development or ISO and other certifications as major subject. For most SMEs, opportunity to learn new business and production management techniques is fairly limited.
- j. Quality control information is generally known and many companies have ISO and other certifications. However, efforts are limited to data collection, which is not linked to corrective measures or kaizen activities on the shop floor. Some companies try to introduce small group activities but they have still to take root. Many companies want to learn about small groups activities in Japan, including the kaizen suggestion system.
- k. It appears that many companies should promptly start with introduction of 5S or 3S activity as the first step of full-scale kaizen efforts or the means to raise employees' morale.
- l. Many companies want to reduce setup change time but do not know an effective way to achieve it and fail to take any action.

- m. Many companies have problems relating to the work flow at factory, probably because they have been making piecemeal expansion. To improve productivity, fundamental layout modification is required.
- n. Many machines are obsolete and are idling.
- o. The study team found that many factories had excess inventories of materials and/or products. In response, companies explained local conditions peculiar to Argentina, which were different from those in Japan and other industrialized countries. Thus, they need guidance that takes into account such conditions, rather than applying the Japanese system as it is.
- p. There is the lack of effort or activity relating to the improvement of labor safety and health, such as lighting inside the factory, control of dust or noise, and an appropriate method to stack up materials and products. This comes from the lack of awareness both on the management and worker sides.
- q. A large number of SMEs are family operated and want support to sustain the same form of management by transferring the ownership to the next generation smoothly. Yet, if new business and production management techniques are to be successfully implemented, companywide efforts for productivity improvement as driven by highly motivated employees are essential. How far family-operated companies can motivate employees is questionable.
- r. Current state of financial management and accounting control
 - While the corporate diagnosis was conducted from the viewpoint of compliance with internationally accepted accounting standards, most companies seem to be in the state before introduction of the IAS (International Accounting Standard) or at the level similar to Japanese SMEs in around 1960, except for subsidiaries of U.S. companies.
 - Generally, internal accounts issue vouchers and manage revenue and expenditure, and compilation of financial statements and tax accounting are left to an outside account who come to the company once or twice per week.
 - As for cost accounting for products, the cost estimated at the time of product development is used and is revised only when materials, electricity, labor or other cost increases or decreases substantially. Thus, implementation of “management accounting” using standard and actual costs can only be considered in the future.
- s. In Argentina, Internet connectivity and low-cost, high-speed communication infrastructure are well developed, but they have yet to be widely used by companies. This is partly because SMEs are family operated and do not feel the need for a sophisticated information system for information sharing and planned management as they believe that they keep close communication without any problem. Clearly, if they are to improve productivity, they need to use ICT for companywide information sharing and the streamlining of

commercial transaction. To promote wide adoption of ICT, efforts should be made, among other things, to enhance availability of software technology, assure security relating to on-line trade, standardize product specifications, and reinforce the legal system governing patent and copyright protection.

Chapter 4

Rationale for Formulation of Model Project

Chapter 4 Rationale for Formulation of Model Project

The Study includes preparation and submission of action programs for revitalization of small- and medium-sized manufacturers in Argentina, especially those of machine parts. The action programs will essentially propose a set of actions and measures to be taken by the counterpart, which is responsible for formulation of the country's SME promotion policy and implementation of actual SME support programs, for the purpose of promoting revitalization of Small- and medium-sized manufacturers in the country and improving their competitiveness, and they will be developed on the basis of results of the preliminary study and implementation of a model project, and with reference to similar experiences in Japan.

The model project, which constitutes a core element of the Study as described in the following chapter, will be carried out to examine feasibility of the action programs that are proposed in the final report. The results of the model project and their evaluation will be reflected in final action programs that will be formulated later.

For this reason, this chapter presents basic concept that is incorporated into essential features of the action programs and constitutes the basis of formulating the model project, before the details of the implementation plan for the model project are described in the subsequent chapter.

4.1 Industrial Policy and SME Promotion Policy

Growth of the manufacturing industry is said to have a trickle-down effect to promote vitalization of its upstream (raw materials, etc.) and downstream (packaging and transportation) sectors. Its GDP share in a country grows with progress of industrialization but generally reaches its peak at around 20-23%, because the development of the manufacturing sector causes expansion and diversification of domestic sectors and spurs growth of service sectors such as physical distribution. In any case, the manufacturing industry is the driving force behind national economic development in terms of job creation, income increase, and the earning of foreign currency.

At present, the information industry is hailed as a next-generation of economic driving force, but the fact remains that the industry is actually founded upon conventional, industrial technologies, especially production technology required to make information and communications equipment as well as management technology used to support business operations and production activities. In other words, it is not information technology or IT per

se that creates employment opportunities, earns foreign currency, and increases personal income. Rather, the manufacturing industry including a broad base of related industries should take credit for its vital role in supporting the development of information technology. Thus the manufacturing industry still forms the core and central force of the industrialization process, for economic development continues to be the highest priority for any country and industrialization provides the most feasible and effective way to archive the goal.

Traditionally, it was long believed that government policy to promote and nurture the manufacturing industry was essential in promoting technological development and productivity improvement, which would be a sole source of industrial development and economic growth in any country.

In reality, however, as the manufacturing industry in many countries struggled to grow beyond the infancy stage, and as the laissez-faire policy was increasingly adopted as a feasible way out from economic confusions in the 1980s, the policy to emphasize government's leading role in industrialization faded away from the front stage of national economic policy making.

The laissez-faire policy, also pursued by the Argentina government in the 1990s, basically relied on the market economy and its natural force, and the country's economy underwent structural changes as the market economy theory dictates, i.e., the secondary sector's GDP share declined after 1990 while the tertiary sector grew to accelerate transformation of the country's industrial structure from manufacturing to service-oriented. In reality, however, growth of the tertiary sector occurred while the manufacturing industry was still in its infant stage. This means that the tertiary sector hired a large number of workers whom the manufacturing industry could not absorb due to its inability to create sufficient employment opportunities. As a result, many workers in the service sector are underemployed. As the manufacturing industry in Argentina is finally in the recovery stage after the economic crisis in 2001, it is the time to support its stable development and growth through the government's industrial policy that focuses on sustainable industrialization.

Today, there are intensive discussions on government role in the national industrialization process and industrial policy, and an increasingly number of people argues that government intervention in the marketplace leads to deterioration of economic efficiency. However, this argument does not stand for generalization because some countries have achieved economic development under government intervention, especially Japan, South Korea and other countries in East Asia. At the same time, these cases of successful industrialization under government's vigorous industrial policy are clearly conditioned on government's ability to formulate and

implement fair and effective policy and consensus in the country to support such policy. In fact, there are a large number of cases that failed to produce expected results under government's intervention that was carried out while failing to meet such condition.

Industrial policies focusing on promotion of industrialization can be generally divided into the following two categories.

a) Selective policy

The selective policy generally refers to, among other things, protection and nurturing of infancy industries and government subsidy to research and development in specific fields of technology. However, it is often difficult to determine potential competitiveness of specific companies and industries in the international market, thus creating a risk of introducing and maintaining industrial policy that unduly protects companies and/or industries that are incapable of attaining international competitiveness in the first place.

b) Interindustrial (neutral) policy

This type of policy usually has generic names, such as SME promotion policy, export promotion policy, science and technology promotion policy, and human resource development policy. Compared to the selective policy, the interindustrial policy has a wider target range and experiences failure less frequently. Its primary purpose is to establish preconditions for domestic industries to enter the international market and gain competitiveness.

It should be noted that, given a large number of cases of failure under government intervention in the market, and given the progress of market opening and globalization that need to be taken into account as the given conditions, many countries are reluctant to choose the selective policy and instead focus on the interindustrial (neutral) policy.

Government's intervention in promotion of SMEs as part of interindustrial (neutral) policy is generally justified as "a means to provide a level playing field for SMEs that usually face various unfavorable conditions against large enterprises by implementing a program that helps correct such conditions that are difficult to be overcome through the working of an ordinary market mechanism."

SME promotion policy generally covers the following functional areas, in which government can still play a significant role.

- 1) Improvement of society's ability to introduce and absorb technology
- 2) Reduction of service link costs

- 3) Development of an environment to promote the building of diverse relationships between individual enterprises
- 4) Formation of industrial concentration
- 5) promotion of transaction between enterprises in the same region

4.2 Improvement of Society's Ability to Adopt Technology and Technology Transfer

The machine parts sector, for which the model project will be carried out, can be roughly divided into two sectors: the one producing automotive parts and agricultural machinery parts, with multinational assembly manufacturers operating on the top of a pyramid structure, and another sector supplying parts for general agricultural machinery, food processing machinery, and consumer equipment, which is less structured than the former.

In the former sector, assembly manufacturers decide on their production sites by using the market for end user products as the primary factor in many cases. They purchase standard parts from worldwide suppliers that can meet strict QCD requirements, while internally making functional parts that require frequent changes in specification and/or adjustment or parts that need to be delivered strictly on time. Also, they sometimes procure certain parts from local suppliers that are operated in close proximity, under strict quality control and guidance. Thus, compared to the period when multinational assemblers were actively engaged in improvement of technical capability of local suppliers under the host country's protectionism policy, such as import substitution and local content requirements, they are now operating according to their own long-term strategy and their linkage to local communities and suppliers is very weak. This is evidenced by the reaction of automakers to the 2001 economic crisis in 2001.

Under the increasingly globalized and volatile business environment, it is very difficult, if not impossible, to link technology transfer made by assemblers and other customers to local SMEs - in the course of supply contract - to the long-term formation of the country's technology base and then to self-propelled economic development. In particular, technology transfer cannot be successfully made if there is a large gap between the transferred technology and technical capability of industry or society that receives it. In this case, government is expected to take measures to promote the improvement of basic technology levels to facilitate technology transfer, or the improvement of "society's ability to adopt technology."

On the other hand, the sector supplying general machine parts is also expected to establish and maintain competitiveness of its products, which should be backed up by production technology that can meet demand for higher performance and diverse products and can compete with

imported products. Clearly, technology and product development as well as the improvement of productivity and competitiveness can be achieved only when the company has a reliable technology base consisting of basic production techniques and resources.

For any manufacturing industries including the sector supplying consumer products, technology forms their foundation. In particular, the average technology level in the country, the degree of technology pervasiveness, and the ability to adopt technology are indicative of the following abilities that are essential for development of local Small- and medium-sized manufacturers: 1) ability to absorb and develop technology transferred from outside sources; and 2) ability to develop new technology.

4.3 Positioning of Business Management/Production Management Technology in the Manufacturing Industry

Technology required by the manufacturing industry consists of “production technology” “production skills,” and “business management/production management technology,” which is also called soft technology. Production technology may be divided into “essential technology” and “product development technology.” Essential technology is basic production technology covering the processing and shaping of materials. For instance, the manufacture of machine parts requires casting, forging, presswork, machining, plastics molding, welding, and assembly, each of which constitutes essential technology. On the other hand, product development technology refers to research and development capabilities required for creation of new technologies and products

The production process for machine parts generally proceeds in order of product development, machining/forming/molding, and assembly. For manufacturers of machine parts, serving the end user market with their proprietary technologies and products constitutes an ultimate goal. Interesting enough, industrialization in many countries has proceeded or proceeds in an opposite direction, i.e., it starts with assembly of imported components and parts, which then extends to machining and processing of materials, designing and manufacturing of dies/molds and jigs, finally product development and designing.

Our preliminary survey of local SMEs indicates that most SMEs manufacturing machine parts strive to improve productivity by using field-proven technology and limited resources, including equipment and workers. Few companies are engaged in development of proprietary technologies or new products.

This situation facing small- and medium-sized manufacturers is not unique to Argentina. Yet, it is possible for them to create their own competitive advantage by effectively combining various management resources, each of which cannot constitute a key element of competitiveness. In the machine parts sector, suppliers are increasingly expected to establish and maintain a production management system capable of manufacturing small lot products in large varieties in order to satisfy demand from their customers who are engaged in product development to meet the market needs by incorporating diverse types of parts into machinery. Under these circumstances, for small- and medium-sized manufacturers that need to improve productivity and competitiveness by optimally combining limited resources, business and production management technology is an essential element in addition to essential technology and production skills.

In Japan, there are organizations specialized in training of soft technology for SMEs and SME consultants, which are located throughout the country. In Argentina, however, there are limited opportunities for SMEs to learn soft technology, while some companies send employees to training programs offered by trade associations and support organizations and some receive technical advice from consultants. As judged from the study team's observation obtained in the course of corporate diagnosis and interview with management, the degree of pervasiveness and practicing of soft technology in the country is lower than that in other countries visited by the study team. A World Bank report¹ points out that, while there is strong demand for soft technology in the country, it is not indicated in a needs survey because many companies are not aware of such technology that has still to be known and adopted widely. This substantially agrees with the results of our questionnaire survey conducted in the basic survey stage.

Clearly, dissemination of soft technology to local SMEs should start with stimulation of demand while many of them are currently unaware of importance of soft technology for the purpose of improving productivity and competitiveness, followed by the buildup of a system to meet demand. In this connection, the questionnaire survey conducted in the basic survey stage indicates that companies that wish to receive support are highly interested in field guidance that can produce measurable results, in addition to transfer of knowledge.

In Argentina, various organizations provide support in the field of production technology, led by INTI. However, there is no official support system, whether public or private, for soft technology (business and production management technology) despite its importance in revitalization of small- and medium-sized manufacturers, equaling that of production

¹ Small and Medium-Sized Enterprises in Argentina (Report No. 22803-AR), August 2002

technology. As a result, dissemination of soft technology is currently spearheaded by consultants whose quality varies greatly among individuals.

The establishment of a formal system to promote dissemination of soft technology to local SMEs, including education and training on basic knowledge and skills, is one of the important roles that should be played by government. In fact, it is as important as school education and should form an integral part of national industrial policy. Its importance remains unchanged under the globalizing environment. For this reason, the establishment of a system to disseminate soft technology is proposed as a key element of the action program.

Note that this proposal is presented as “improvement of society’s ability to absorb technology,” one of SME promotion programs.

4.4 Promotion of an Integrated SME Support Mechanism

For effective implementation other SME promotion programs, such as “development of an environment to build diverse relationships between companies,” “formulation of industrial concentration” and “promotion of trade between companies within the region,” collaboration of the public and private sectors and initiative taken by local government hold the key. Most of SMEs are closely linked to local areas where they operate and need customized support, in a sharp contrast to large enterprises, and an integrated support mechanism using local public and private organizations, including educational institutions, can realize such support.

In Argentina, Red de Agencias Regionales de Desarrollo Productivo, as discussed in 1.4 of this report, is proposed as a regional-level, integrated SME support mechanism, and approximately 50 “Agencias” have been established and are networked. They are established jointly by the central or state government and municipalities or the private sector in order to promote linkage between local support organizations, both public and private, thereby to realize support that takes into account local characteristics.

Primary functions of “Agencias” are to identify issues and needs of local industries and to support their modernization both in financial and non-financial aspects, including startup support. Non-financial support activities are listed as follows.

- Provision of information and consulting relating to company support programs, tools and services at national, provincial and municipal levels
- Corporate diagnosis to identify strengths and problems of companies and give advice on solution
- Consulting service to introduce experts in relevant fields (management, quality,

innovation, HR management, taxation, etc.) for the purpose of supporting the company's growth and building a good relationship with management

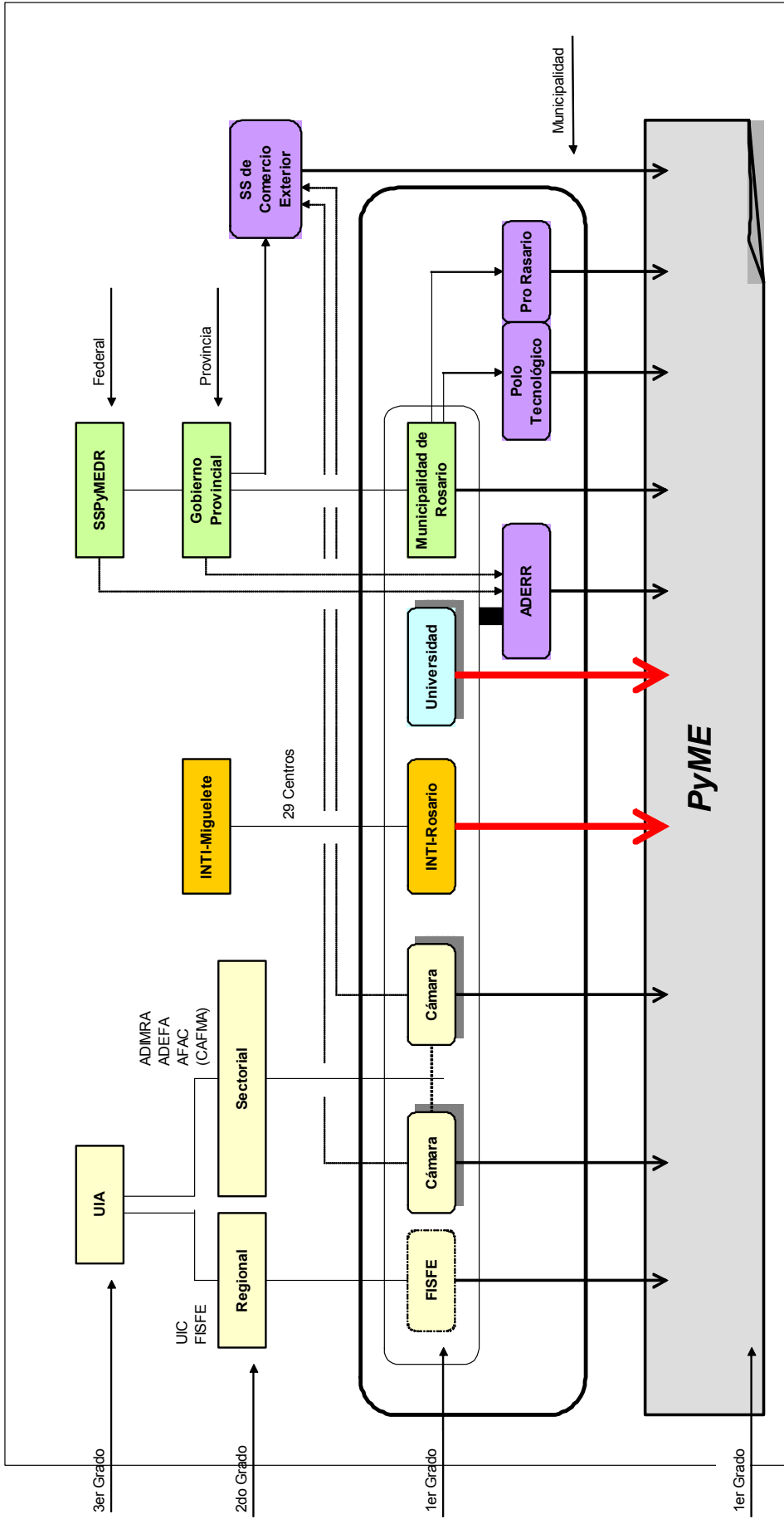
- Startup support from preparation to actual start
- Consulting and training in the field of IT and electronic commerce
- Promotion of inter-company linkages through the grouping of companies and project formulation
- Domestic market development and export promotion
- Intermediary service to find and introduce professional consultants, companies of potential partners, and organizations specialized in relevant fields

As for reinforcement of "Agencias", various programs have been implemented, including those conducted by SSPyMEyDR under cooperation of foreign donor organizations. For instance, 19 activities were reportedly conducted in 2003.

In Japan, major players in SME support activity are also local governments as well as training institutes specialized in soft technology discussed in 7.1 of this report. In particular, local governments have SME support centers that have been successfully serving as a window for integrated SME support service provided jointly by the public and private sectors.

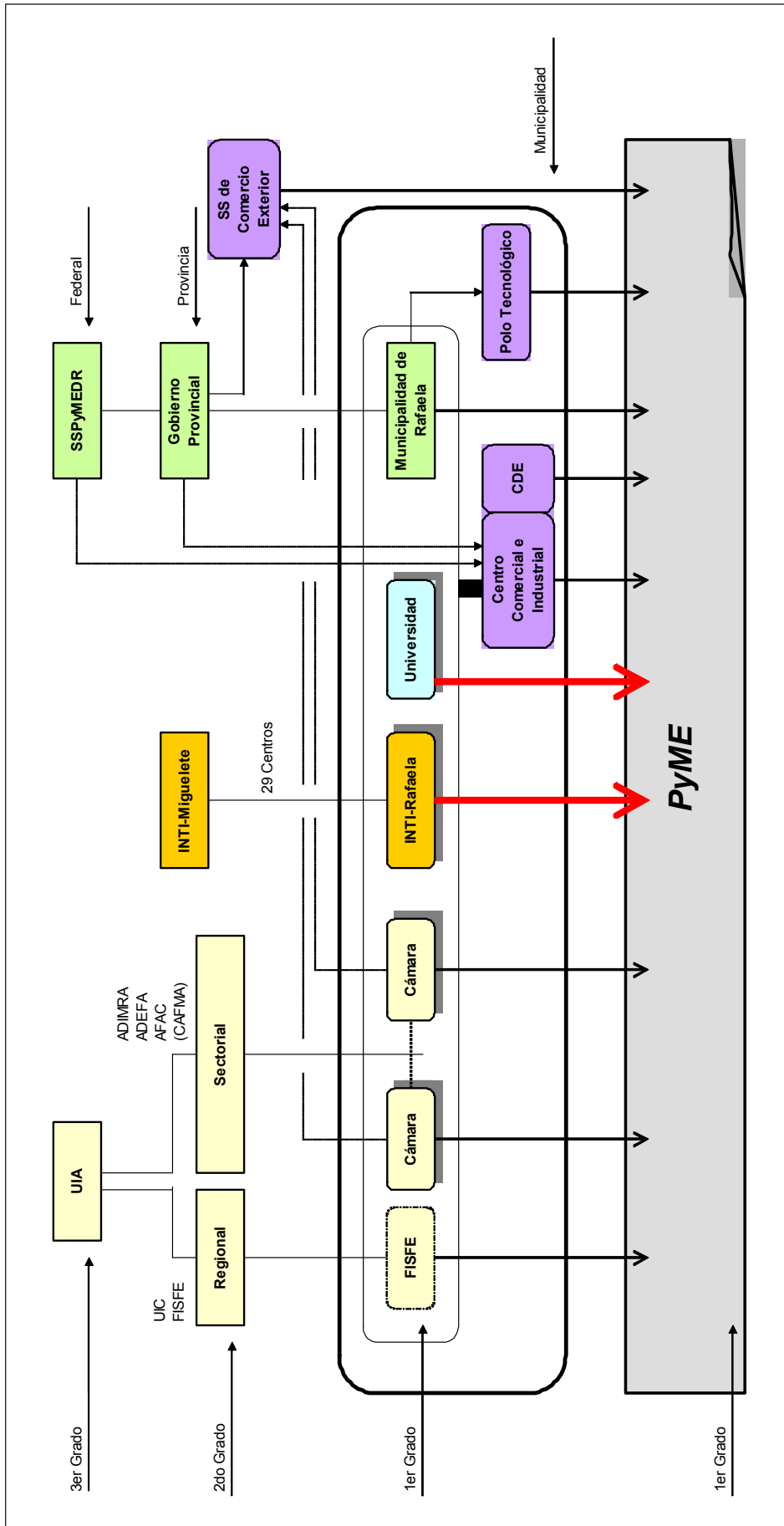
Nevertheless, the operating status of 50 "Agencias" varies greatly and some are reportedly inactive. As their intent and objective appears to serve the needs of the times, however, their activities should be enhanced. For this reason, the reinforcement of "Agencias" is proposed as a key element of the action program.

Figures 4.1, 4.2 and 4.3 present SME support organizations in Rosario, Rafaela, and Córdoba, and "agencia" is shown as the integrated support organization in each area.



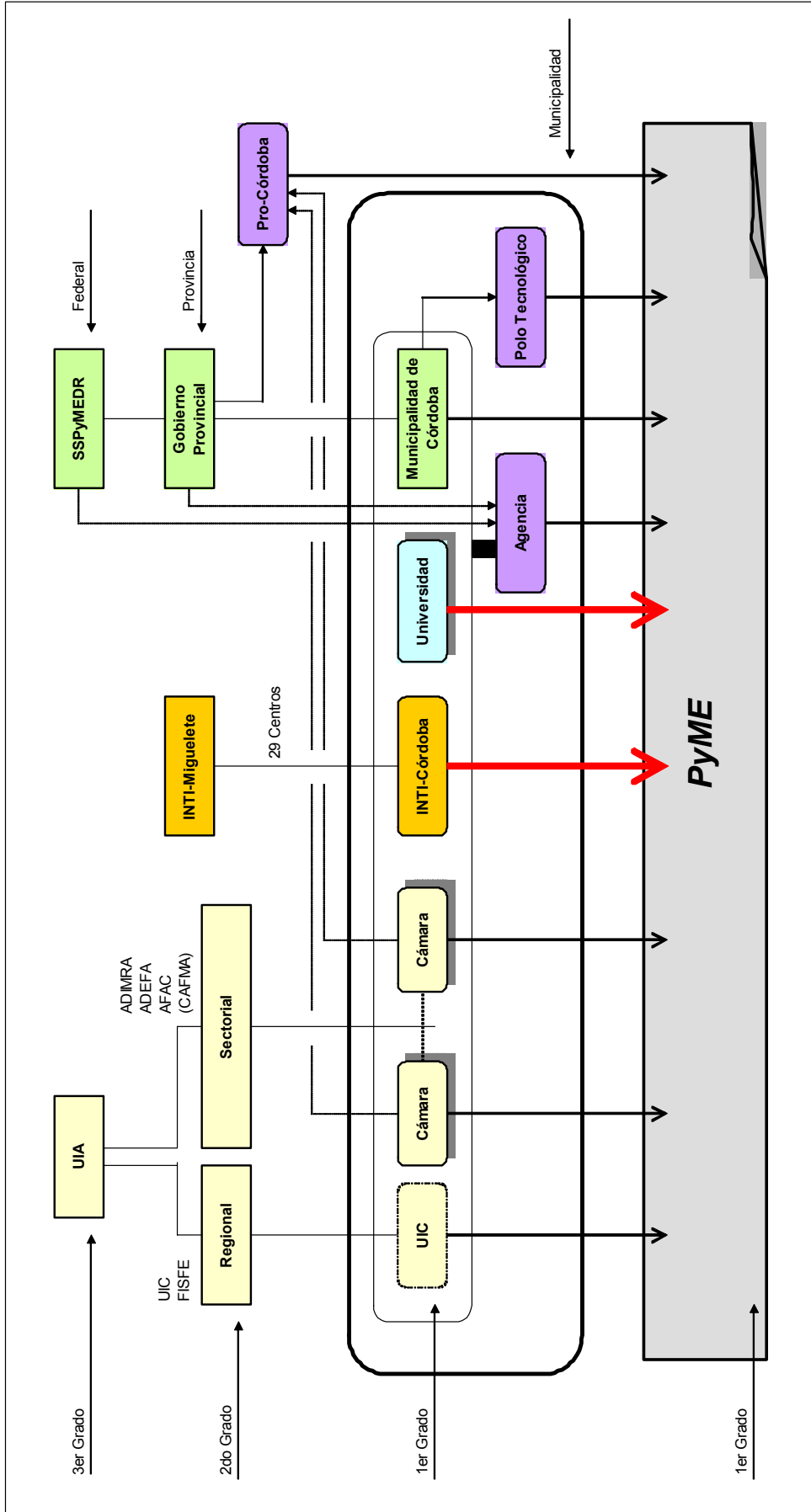
Source: JICA Study Team

Fig. 4.1 SME Support Scheme Ciudad de Rosario



Source: JICA Study Team

Fig 4.2 SME Support Scheme Ciudad de Rafaela



Source: JICA Study Team

Fig. 4.3 SME Support Scheme Ciudad de Córdoba